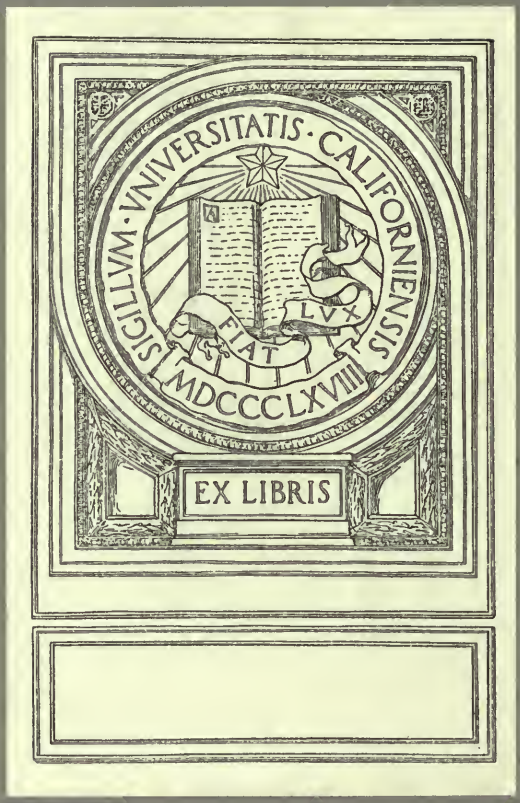
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WORLD GEOGRAPHY

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WORLD GEOGRAPHY

ONE-VOLUME EDITION

BY

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WITH MANY COLORED MAPS AND NUMEROUS ILLUSTRATIONS
CHIEFLY PHOTOGRAPHS OF ACTUAL SCENES

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PREFACE

Need of a one-volume complete geography

HERETOFORE it has been necessary for pupils desiring to study geography with a fair degree of thoroughness to purchase two expensive books, at least, and study each from cover to cover. This plan involves much useless repetition, since, owing to the nature of the subject, most of the fundamental notions of geography must appear in the first volume as well as in the second. Moreover, a geography treating all topics in a single volume is more useful as a book of reference.

Necessity of Home Geography and other basal notions

The ultimate basis for all study of geography is experience. Hence Home Geography should receive careful attention. Yet textbooks rarely treat this subject at all, and those that do devote but few pages to it.

Home experience alone, however, cannot offer a complete basis for the later study of geography, because no one locality presents all the features required. For this reason the best books have contained some definitions and illustrations, as of mountain, river, valley, harbor, and factory, and have planned to build the later text upon the ideas these gave as a foundation. But mere definitions do not produce vivid, accurate pictures. The average pupil who has pursued geography for a year has little notion of the great importance of soil, of what a mountain or a river really is, of the value of good trade routes, and why a vessel cannot be sure of finding a harbor wherever it may cast anchor along the coast. Yet such ideas are the proper foundation for the study of geography in the higher grades.

How this need is met

The first 185 pages of this volume attempt to supply this foundation by treating, first, such common things as food, clothing, shelter, soil, hills, valleys, industries, climate, and government, which are part of every child's environment; secondly, such features as mountains, rivers, lakes, and the ocean, which, though absent from many localities, must be taught in preparation for later study; and thirdly, country and city contrasted with each other. Definitions and abstract statements, however, are not relied upon for giving this knowledge, but detailed descriptions and discussions instead. This by no means involves neglect of the child's own environment after the introduction of the unfamiliar matter, for throughout the geographies, home experiences are used. We believe that this plan gives a fuller guarantee of fitness for advanced study than is now furnished by any other common school text.

How relationship to man has been secured

One of the most important features of this volume is the establishment of a closer relationship between man and the earth than has usually been attempted in geography texts. A large

number of the topics, instead of being coldly presented, as so much fact to be learned, both have been *approached*, and also have received their *full treatment, from the viewpoint of man's interest in them.*

For example, for typical treatment of a continent turn to Asia (p. 415), and of a single country, to China (p. 426). Asia is declared to be the largest and most populous of all the continents, and also to have the oldest civilization. Besides, it lies next to Europe, the best known continent. Yet, possibly, except Africa, it is the least known of all the continents. Why it should be so little known becomes then a question of real interest; and the answer, as presented on pages 415–419, involves consideration of its surface features, climate, and inhabitants. Likewise in the study of China (pp. 426–433), the former progress of its inhabitants first receives attention. This is contrasted with their present backwardness. Then, since the future progress of the Chinese is one of the live questions of the day, the area and population of the country, the variety of its climate, its surface features, resources, manufacturing, and facilities for transportation, are all considered with reference to this one problem. Finally, the recent advances of China are discussed and its principal cities located. Thus, as far as possible, each continent and each country has been approached from the point of view of the learner, and the questions raised at the beginning control the presentation that follows.

The danger of poor organization, and how avoided

Organization of subject matter, however, is perhaps the task that has required the greatest effort by the authors. Organization is as great a factor in the mastery of knowledge as in the conduct of business or of politics.

The tendencies in geographies are, on the one hand, to list the facts as independent entities regardless of sequence and perspective. The extreme of this method is found in the treatment of the United States by individual states, in which case the demand for any real organization is ignored. Or, all the continents and countries are treated according to exactly the same outline, *i.e.* in the order of location, area, surface, climate, agriculture, etc. This is sometimes called a scientific organization; but the deadly routine that it establishes shows it to be about as psychological as it would be to describe the appearance of several persons under the order of head, body, and extremities in each case. And, again, no matter what outline is followed, there is a strong tendency to include many statements that are irrelevant even to the loose headings under which they fall, and that, therefore, destroy sequence and unity.

In order to avoid these tendencies the authors have first fairly *drilled themselves* in the fact that *good literature is organized around ideas of live interest to man;* and that any text whatever, intended for children, if it is to possess the earmarks of good literature, must be organized on this basis, with most careful attention to sequence and perspective. With this principle in mind, they have set to work to do two things: —

First, for each page, more or less, they have fixed upon some central thought that binds firmly together the details underlying it, and secures their unity.

What this central idea is in each case is clearly shown in the marginal heading; and by grasping it early, the child is enabled to master a lesson much more quickly and easily than otherwise.

In the second place, the authors have selected for the unifying thoughts, not merely scientific abstractions, but ideas likely to prove of peculiar interest to young students. The treatment of Africa, beginning on page 446, well illustrates this, as well as that of Asia and of China, to which reference has already been made.

The unifying thought just mentioned is usually some vital problem, from the point of view of which facts are selected and arranged. In solving such problems full use is made of the truth that geography must rest upon a physiographic foundation. The authors believe that, when the physiographic truths about a given region are clearly grasped, most of the other geographic facts easily arrange themselves as links in a causal chain. Thus the many details touching a particular locality are taught in relation to one another, so that they approach the form of a narrative.

Value and extent of physiography

Physiography has, therefore, been introduced freely; but under two limitations. First, only such physical facts are included as are shown really to function in man's relation to the earth. Physiography that is clearly shown to have a *real* bearing upon man greatly enriches geography; it is the *unused* physical geography that is a stumbling block. Second, these physical facts are presented in *connection with their use*, not entirely apart from it and in a different part of the book.

Few teachers will deny that clearness of comprehension, and interest in any subject, are greatly dependent upon the abundance of carefully selected details. Good stories, such as that of Robinson Crusoe, reveal this fact very plainly. Accordingly, while this volume treats only of the same subjects as other geographies, it contains more detail than any one of them, as is shown by the larger amount of page surface.

Details
1. Why abundant

One very common objection to such detail is that it makes lessons long, and therefore difficult. That may easily happen, for unorganized details render a line of thought circuitous and confusing, and more to be dreaded than even a skeleton outline. But on the other hand, well organized details make a subject not only interesting but *simple* and *easy*. It is partly good organization that makes it possible for one to reproduce a long story with ease after a single reading; and it is often largely because of poor organization that even a half page of text is difficult to reproduce.

2. Danger of abundant detail; and how avoided

Accordingly, such topics as farm, cattle ranch, irrigation, lumber camp, and factory are treated at unusual length in connection with the section of country in which each is most prominent.

3. Examples of unusual detail

For example, lumbering, fishing, and the manufacture of cloth, boots, and shoes receive their most detailed treatment in connection with New England; the mining of coal and iron ore and the manufacture of iron goods are discussed in connection with the Middle Atlantic States; and gold mining, irrigation, and grazing are naturally included under the Western States.

The industries and objects thus described, being fairly typical of industries and objects found elsewhere, are on that account worthy of being called *types*.

The study of the United States has furnished occasion for detailed treatment of most geographic types. Some important features and occupations, however, are not found in the United States, but to these the authors have given the same careful consideration. For instance, the Brazilian forest is presented as a type of tropical forests (pp. 318–319). Other illustrations may be found in the treatment of the linen industry on page 344, and of the silk industry on page 363.

Extent of review and comparison

A common defect in the teaching of geography is that pupils are allowed to forget about one country while studying others, and the result is that, by the time Australia is reached, most of what previously has been learned about the United States, as well as other countries, has faded from memory. Yet the relation between North America and the other continents is so marked that this defect is quite unnecessary. For example, most of the industries and basal principles of physiography and climate have received the child's attention when he has completed a general study of the United States. Foreign lands illustrate the same great ideas as our own country, under different conditions. This means that the comprehension of foreign countries may best be gained, if one uses one's previous knowledge of the United States as a basis of comparison. If, then, this old similar knowledge is carefully called to mind when the physiography, climate, and industries of a foreign land are approached, pupils will not only secure a fuller appreciation of that region, but will also freshen their knowledge of the United States.

Such review of the United States is a prominent feature of this volume. For example, in approaching the physiography of South America (p. 310), the physiography and climate of Europe (p. 334), etc., the authors have reproduced at some length the corresponding conditions found in our own country.

To supplement this kind of review, several sets of questions, which call for still different comparisons with the United States, are included, one series being found at the close of the treatment of each continent. These reviews are likewise rich in motive, inasmuch as they recall leading facts in regard to the United States from varying points of view. It should be kept in mind, also, that each set at the same time reviews another continent from a new point of view.

Pages 273–291 present an organized review of North America alone, which includes the principal facts about our continent that every pupil should know on completing the grades. The last section, "Review of the United States and Comparisons with Other Countries," provides for still further review. It has seemed to the authors an anticlimax to close several years' study of geography with the *Islands of the Pacific*, lands farthest away from us and of least interest. On the other hand, it has been deemed highly important that, after all the countries of the world have been treated, the closing chapter should show in summary the rank of our own land and its relation to others.

The most difficult part of common school geography is that dealing with the motions of the earth, latitude and longitude, winds, rainfall, ocean currents, and temperature. Yet these subjects are generally placed at the beginning of the advanced book, so that their treatment follows immediately upon Primary Geography. This arrangement requires children to move abruptly from a meager study of the simplest facts to the broadest abstractions, which is thoroughly bad.

Place of general geography

In this volume practically all of this difficult subject matter is delayed till after the middle of the course (p. 292), with the exception of a very brief treatment of latitude and longitude on page 92. Whatever facts in regard to winds, rainfall, temperature, etc., are needed in the intensive study of North America have been plainly stated, when wanted, like other concrete facts.

After the study of our continent has been completed, and a fair number of concrete data bearing on these matters has been presented, winds and rain, and ocean movements and distribution of temperature, are treated in detail. By this arrangement, the study of these difficult subjects has been postponed at least one year, until so many of the facts that are necessary to their appreciation have been presented concretely that they then may be approached somewhat inductively. The detailed treatment of latitude, longitude, and standard time, and of the revolution of the earth, with its effects, is not included in the main text at all, but is placed in the Appendix. The authors are convinced that the latter topic should not be studied in the elementary school, and that the former should be omitted by many schools. This arrangement is one of the most important among the distinguishing features of this volume.

The general principles regarding industries, distribution of inhabitants, mutual relation of city and country, and dependence of various sections upon one another, contrary to custom, are also presented in the last part of the volume. One reason is that these principles approach abstractions in their nature, and are, therefore, too difficult to be earlier understood by children. They are, moreover, to a large extent, a summary of what has preceded, and therefore naturally come late, where a more inductive approach is possible. The guiding principle is that comparison of facts (of countries, in this case) should not be undertaken until after the facts themselves have been studied.

How the text may teach proper method of study

While there is no reason why a textbook in geography, more than any other text, should offer suggestions about methods of study, every one knows that children's ways of studying are often extremely crude, involving great waste. On this account it seemed advisable to include definite suggestions on this subject, applicable both to this and to other books. These are found on pages 10, 30, 53, 66, and 80. They occupy little space; but they will have accomplished much, if they are influential in leading children to do the things suggested, and if, in addition, they direct the attention of both children and teachers to a more careful consideration of proper methods of study.

Also, by the insertion of marginal headings, so carefully worded that they

usually suggest a single and definite question for the text to answer, it is expected that children will be materially influenced to master their lessons by "*points*" rather than by pages — a very vital factor in the proper method of study.

Use of illustrations

Half-tones from photographs are used whenever possible, and these have been selected with great care from collections of many thousands. In all cases they are introduced, not as mere pictures, but as illustrations of topics treated in the text. It is expected that they will be studied, as well as the text. It is believed that the book is as thoroughly illustrated as is desirable for the needs of the student, and the authors have used care not to overillustrate by throwing together a heterogeneous mass of pictures unrelated to the text. It is their belief that a geography should not be a picture album.

Acknowledgments

The maps in this book have been made by The Williams Engraving Company, with the exception of the relief maps, which were prepared by E. E. Howell, of Washington.

Mr. Philip Emerson of the Cobbett School, Lynn, Massachusetts, and Professor R. H. Whitbeck of the University of Wisconsin have aided in various ways in the preparation of this volume. Valuable assistance in gathering statistics and making lists of books of reference has been rendered by Mr. Irvine Perrine and Miss Kathryn Kyser of Cornell University. The sources of the material for the text have been many, of course; but among them Mills' "International Geography," "The Statesman's Year Book," The United States Census Report, and Ratzel's "History of Mankind" call for special mention.

For the illustrations, many of the drawings have been prepared by Mr. C. W. Furlong, the well known artist. In addition, the authors are especially indebted to William Rau of Philadelphia, from whose extensive collection they have selected a large part of the photographs from which half-tones were made. To other photographers whose pictures have been used — a list far too long to incorporate here — the authors' thanks are due. Special mention should also be made of the assistance rendered by the Philadelphia Commercial Museum, in supplying a series of world product maps, and in giving permission to reproduce certain photographs.

THE AUTHORS

TABLE OF CONTENTS

PART I. HOME GEOGRAPHY

PART II. WORLD GEOGRAPHY

PART III. NORTH AMERICA

PART IV. GENERAL GEOGRAPHY

PART V. SOUTH AMERICA

PART VI. EUROPE

PART VII. ASIA, AFRICA, AUSTRALIA, AND ISLAND GROUPS

PART VIII. REVIEW OF UNITED STATES AND COMPARISONS WITH OTHER COUNTRIES

LIST OF MAPS

COLORED MAPS

RELIEF MAPS

CITY MAPS

MAPS ILLUSTRATING CLIMATE

PRODUCT MAPS

POPULATION MAPS

OTHER MAPS

WORLD GEOGRAPHY

PART I. HOME GEOGRAPHY

SECTION I. FOOD, CLOTHING, AND SHELTER

1. Among the People of our Own Country

1. Food

In the spring, men begin to work the soil. Those who have small gardens break up the ground with such tools as spades and forks. Those who live on farms turn the soil over with plows drawn by horses. In these ways the soil is loosened and made soft, so that seeds and plants can grow in it. After the planting is done, the weeds must be killed and the soil must be loosened again. In places where little rain falls, other ways of watering the plants must be found.

What the farmers do

Later in the summer, the crops are ready to gather. This is the harvest season, and it is a very busy time for the farmers. They often begin work at sunrise, and do not stop before dark.

They raise much more than they need for themselves, and what they do not want they sell. Those of us who live in the city eat at every meal some of the things that were grown on farms. This shows how important to every one of us is the work of farmers.

How their work is of value

Fig. 1.— A herd of dairy cows in pasture.

One of their most valuable crops is grass. To be sure, we do not eat grass. Yet it helps to give us food. Can you tell how? If you cannot answer this question, perhaps Fig. 1 will help you. Make a list of the different kinds of food that you eat in one day, and find how many of them come from farms.

A very great number of men are kept busy raising animals, grain, and vege-

tables to furnish food for other people. How would you like that kind of work? What are some of the pleasant things about it?

Many other people are at work preparing the farm crops for food. For example, milk is made into butter and cheese, oats into oatmeal, and sugar-cane into sugar. Can you tell the story of a loaf of bread?

Preparing our food

2. Clothing

Every one must have *clothing* as well as food. The Indians dressed very lightly in summer; but in winter they had to wear heavy clothing made out of the skins of animals.

FIG. 2.—Picking cotton in a cottonfield in the South. The white patches are fluffy cotton out of which cotton goods are made.

We wear much more clothing than the Indians did, both in summer and in winter, and it is of many more kinds. Most of the materials for our clothing, as well as those for our food, come from the soil. For example, girls' dresses are often made of cotton. Point out such a dress. In some regions cotton is one of the farmers' principal crops. Fields of cotton (Fig. 2) are as common in the South as cornfields are in the North.

Materials for our clothing, and where they come from

Linen handkerchiefs, collars, and cuffs are made of flax. This plant also is raised in large fields, much as wheat and oats are grown.

Some of the materials for our clothing come from animals that feed on plants For example, a boy's coat, if not made of cotton, is made of wool, which grows on sheep. Find such a coat.

The leather for your shoes came from the hide of some animal, perhaps a cow. Name several things that you wear, and tell, if you can, from what material each has been made.

Cotton, wool, and hides are called *raw materials*. Much work is usually necessary to change raw materials into clothing. For example, cotton and wool must be spun into yarn and woven into cloth. Perhaps you can tell what more must be done to make a dress or coat. What are some of the things that must be done with hides before they become shoes or gloves?

Work necessary to change raw materials into clothing

The work of preparing our clothing keeps many, many thousands of men and women busy both winter and summer. Do you know any persons who do such work? Describe some of this work that you have seen. Where was it done? What clothing have you seen made in your own home?

3. Shelter

Shelter, as well as food and clothing, is very important. We must have houses to protect us against rain; also, against the heat of summer and the cold of winter. We must have fuel, too, such as coal, or wood, or gas, to warm our houses.

Why shelter is necessary

The Indians often lived in tents called wigwams (Fig. 3). These are pleasant enough in summer, but are very cold in winter. Sometimes the Indians built much better shelters, in some places using wood, in others, stone or clay.

Materials used for shelter in our country

FIG. 3.— An Indian wigwam, the home of the Indian girl who stands in the foreground of the picture.

What are some of the materials that we use in building our houses? Make as full a list of them as you can. Where does the wood for the floors and for other parts of a house come from? The stone? Where is the material for brick found? For nails? Can you tell where the other materials in your list come from? Where is coal found?

Most of the men in our country are engaged in some one of these three kinds of work; that is, in preparing *food*, or *clothing*, or *shelter*. People living in other countries have the same kinds of work to do. But in many other countries the food, clothing, and shelter are very different from ours, for reasons that you will now learn.

2. Among the Negroes of Central Africa

Central Africa, the home of the Negroes, is a part of the earth where the people live in a very strange way. Have you ever thought what a difference it would make with us, if we had summer all the time? Central Africa is just such a land. Every day in the year is hot.

The heat and rain in Central Africa

In some parts of Central Africa the air is damp or muggy, too, as it is here on our most unpleasant summer days, and heavy thunderstorms are common. It is one of the rainiest places on the earth.

Where there is so much heat and rain, plants grow very rapidly. You have noticed, perhaps, how grass and plants

thrive on warm, damp days. Because there is just such weather all the time in this part of Africa, plants grow there in vast numbers. Giant trees are found in the forests, and vines, trees, and other plants grow so close together that one cannot make his way through them without cutting a path.

The vegetation that grows there

Many fruits and vegetables grow wild there; and since there is no winter in that land, there is no season when all the vegetation stops growing and loses its leaves.

FIG. 4.—Negroes of Africa sitting in front of their grass-covered huts.

It is very easy for people to obtain food, clothing, and shelter in such a land. Food is plentiful. Bananas or other fruits can be plucked from the trees and bushes at any time of year. Or if beans, potatoes, and corn are wanted, one has only to scrape a hole in the soft earth for planting the seeds. There is plenty of meat to be had, too, from cattle, sheep, and goats, or from wild game, such as the buffalo and antelope.

What the people eat and wear

It is also easy to provide clothing in hot countries. One reason is that not much of it is wanted. Figure 4 shows how little clothing is needed in the hot country of Central Africa. Sometimes skins of animals are used; but the natives often use cloth made from the bark and fiber of trees and plants that grow in that land.

Since there is no winter, one might think that houses would not be needed; but the heat and rain make shelter of some sort very necessary. Sometimes the people live in trees, or in caves, as the Swiss Family Robinson lived for a time. Sometimes they stick branches of trees into the ground in the form of a circle, fasten the upper ends together, and then cover the sides and top with brush, mud, grass, or straw (Fig. 4). Their huts are always very simple; they are only one story high and usually have no windows. When a savage Negro first saw one of our houses, he cried out, "This is not a hut; it is a mountain with many caves in it!"

Their shelter

You can see that the Negroes who live in the hot, damp part of Central Africa do not have to work hard for food, clothing, and shelter. Are they fortunate to have such an easy time? Would you like to live in such a country and in such a way?

3. Among the Eskimos

Far to the north of us is the home of the Eskimos. They have both summer and winter. But the summer is so cold that the ground does not thaw except at the very surface. The winters are bitterly cold. Heavy snows then fall, the ground freezes to a great depth, and thick ice forms on the sea (Fig. 5).

The cold and snow in the Far North

In such a country no trees can grow. The Eskimo children have never seen trees of any kind. Only small plants are found there, such as mosses, grasses, and very low bushes; and these plants, growing wild, furnish no food except a few small berries.

Plants and animals found there

With so little vegetation, there can be but few wild animals on the land, for they would have nothing to eat. There are a few reindeer, foxes, and wolves, but scarcely any other land animals.

What, then, can the Eskimos themselves find to eat? Not very many things, to be sure. They have to look to the sea, not to the land, for their food. From one year's end to another, they are engaged in fishing and in hunting the seal and walrus; and now and then they catch some sea birds or a polar bear. They have very little food except the flesh of these animals. Even that is difficult to get, especially in winter when the sea is frozen over with thick ice.

What the Eskimos eat

These sea animals supply oil for heat and for light in the long, dark winter. The seals have a layer of fat under the skin, which helps to keep them warm. This seal fat, or blubber, is burned in small lamps for both heat and light. But the Eskimos do not do much cooking. They are fond of raw meat and eat it even when it is frozen!

Other uses of animals

Fig. 5.—Eskimos on sledges drawn by dogs on the frozen Arctic Ocean.

In summer the Eskimos go hunting in small canoes, or *kayaks*, that are easily upset in storms. In winter they often go on long and dangerous journeys over the ice on sleds, or sledges, drawn by dogs (Fig. 5). Can you give reasons why horses are not used in the land of the Eskimo?

The sleds and canoes are not made of wood, like ours. The reason is that no wood grows in that country. The only wood the Eskimos have is that which drifts ashore from distant, forest-

covered lands, or from the wrecks of vessels. There is so little of this that pieces of wood are highly prized. An Eskimo will gladly exchange valuable furs for a small amount of wood.

Parts of the bodies of animals take the place of wood for many uses. Their bones are used to build the framework of the sledges and kayaks, and their skins are stretched over these frames, instead of boards. Bones are also used to make spears, fishhooks, pipes, and even needles; and skins are made into harness for the dogs.

What the Eskimos wear

The Eskimos need the warmest kind of clothing. Their boots are made of the skins of animals, with the fur on. Their clothes also are made of fur; and in that cold land they need to wear these furs both in summer and in winter. How different that is from the clothing worn by the Negroes of Central Africa!

Why the Eskimos build snow huts

The Eskimo houses are even stranger than their clothing. Although there is plenty of stone for building, it hardly pays to build stone houses because the Eskimos have to move from place to place in order to find food. On this account whole villages often must be moved many miles.

Fig. 6. — An Eskimo igloo made of blocks of snow. In the upper right-hand corner is a little figure showing the inside of the igloo.

In summer, therefore, the Eskimos live in tents made of skins, which are easily taken down and moved about. In winter they live in huts made of snow. There is always plenty of snow at hand, no matter where the people happen to be; and in an hour or two they can build an *igloo*, as the Eskimo snow huts are called.

Figure 6 is a picture of one of these igloos. It is about forty feet around the

outside, and is made of blocks of snow piled one on another, till it is high enough on the inside to allow a man to stand up. The entrance is through a snow tunnel about ten feet long, and so low that the Eskimos have to crawl through it on their hands and knees. The purpose of this tunnel is to keep the cold winds out of the hut. When all the persons are inside, the tunnel is tightly closed, so that no draught can enter.

How these huts are built

A stand is made of snow for the lamp, which gives both light and heat. Low benches of snow, covered with furs, are used for beds. A whole family, and sometimes two families, live in a single hut that is no more than ten or fifteen feet across.

You might think that a snow hut would not be very warm; but the snow keeps out the cold, and even when it is stinging cold outside, the Eskimos in the igloo can keep warm. The heat of their bodies, and of the small blubber lamp, warms the air in the igloo, so that it is often too warm for comfort. Of course, with so many people in a single small room, the air becomes very close.

The warmth in such huts

If a family decides to remain in one place a second winter, a new hut has to be built, because the old one melts down during the summer. No wonder that the huts are small!

The Negroes of Central Africa have little work to do at any season to find food, clothing, and shelter. But the Eskimos must work hard for these things even in summer; and in winter all the people of a village may starve to death. Are people in our own country better or worse off than the Eskimos?

4. Among the People of the Desert

While parts of Central Africa are hot and wet, northern Africa is somewhat cooler, and very dry. In fact so little rain falls there that very few plants can grow. On that account it is a desert land, called the *Desert of Sahara*.

The desert of northern Africa

One might travel hundreds of miles in that desert without seeing a tree, or a house, or even a patch of green grass. In such a journey, perhaps nothing but sand and rock and a few half-starved plants would be seen (Fig. 7).

The vegetation found there

A little rain falls now and then even in the driest part of the desert, and grass and flowers quickly spring up whenever that happens. To be sure, these soon wither for want of more rain. But a few kinds of plants, like the acacia, are able to live a long time even in such a place. Whenever it rains, these store up water in their roots, or leaves, or stems, and this keeps them alive till the next rain comes.

Here and there one finds trees and green grass. For in some places streams flow from the mountains out into the desert, and in other places springs occur. These springs and streams water the desert soil near by, so that grass can grow; and if the supply of water lasts throughout the year, trees like the date palm can thrive. Such green places in the desert are called *oases*, and on them are found gardens and villages. The oases are like beautiful islands, many miles apart, in a great ocean of sand and barren rock.

People live on the oases year after

year. Indeed, good-sized towns have been built upon some of them. The fruit that these families most commonly eat is the date, from the date palm tree; they also raise figs and wheat, and keep cattle, camels, sheep, and goats.

The food of people on the oases

Some people who live in the desert, however, have no fixed homes. They spend their time in tending herds of cattle, sheep, and goats. As soon as these animals have eaten the grass in one place, they must be driven to another. Thus these herders, like the Eskimos, must move about and take their families with them. They spend their lives wandering about with their herds. For this reason they are called *nomads*, or wanderers (Fig. 7).

The nomads of the desert

Fig. 7. — A barren desert, and some nomads with the tents in which they live.

For food, these nomads of the desert have plenty of meat and milk from their camels, cattle, and goats. They make butter, too; but it is so warm in the desert that the butter is sent, melted, to market, in goatskins. In some places the people drink the melted butter.

The food of the nomads

The nomads can get other food from the people who live on the oases. Can you name something that they could obtain from them? What food might the nomads give in exchange?

Food can also be brought from other countries. Although there are no railroads across that desert, and no rivers large enough for boats, there is a way of carrying goods from place to place. This is by means of the camel (Fig 8).

How food is brought from other countries

This animal, often called "the ship of the desert," can carry a heavy load on its back, and can travel a long distance without drinking. Indeed, the camel has in his body a sack which is filled when he drinks, and which holds enough water to last for several days. The camels are driven across the desert in droves, called *caravans*.

The dress of the people of the desert, as we might expect, is very different from that of the Negroes. The days

FIG. 8. — A nomad of the desert.

are very warm, for the sky is almost always clear, and the sun shines brightly.

The clothing of the people

Figure 9 shows the kind of clothing that is worn. The strange covering for the head is called a turban. It protects the head against the sun and the fine sand that is driven about by the winds.

Although the weather is hot during the day, it rapidly becomes cool as soon as the sun has set, and the nights are quite chilly. Because of the cool nights these people need much more clothing than the Negroes, and they must sleep under heavy blankets. Their herds supply plenty of wool for cloth; and other materials for clothing are brought by the caravans.

The people living on the oases remain in one place, building houses of sun-dried mud or clay (Fig. 9). But mud huts are not suited to the nomads. It would not be worth while to build such houses, when they might be used only a few days. Like the Eskimos in summer, therefore, the nomads live in tents (Fig. 7) that can easily be taken down, carried about, and set up again. The skins of animals, or the blankets that the nomads weave, are used as covering for the tents.

Why the nomads live in tents

FIG. 9.—A street in a town on an oasis in Northern Africa. Notice the house made of sun-dried clay.

We have now learned some facts about the Negroes in Central Africa, the Eskimos, the people of the desert, and ourselves. From what has been said it is plain that people do not have their own way fully in choosing what they shall eat and wear, and the kind of houses they shall have. These depend very much upon the amount of heat and rain.

What food, clothing, and shelter depend upon

About how to study

In studying this book it is a good plan to read first a number of pages without stopping, just as you would read any story. For instance, the first 3 pages — up to the part telling about the Negroes — might first be read without pause, for the purpose of finding out what it is all about. Then you might read the same part through a second and a third time, watching each heading that is printed near the margin to see if you are getting its answer. When the part about our country has been studied in this way, the part telling about the Negroes of Central Africa should be studied in a similar way; and so on through the book.

Review Questions

1. Name some of the things that farmers and gardeners do. 2. How is their work important? 3. Give examples of other kinds of work that are necessary in preparing our food. 4. Out of what materials is our clothing made? Where do such materials come from? 5. Tell about the work necessary to change these raw materials into clothing. 6. Why is shelter necessary? 7. What materials are used for shelter in our country? 8. Where do these materials come from? 9. What can you tell about the heat and rain in Central Africa? 10. What sort of vegetation grows there? 11. What do the people, who live there, eat and wear? 12. What kind of shelter have they? 13. What about the cold and snow in the Far North? 14. What plants and animals are found there? 15. What is the food of the Eskimos? 16. What other uses do they make of animals? 17. What do the Eskimos wear? 18. Why do they build huts of snow? 19. How are such huts built? 20. Why is it not cold in the igloos? 21. What about heat and rain in the Desert of Sahara? 22. Describe the vegetation there. 23. What is the food of the people? 24. What are the oases? Who live on them? What kind of houses have they? 25. What is meant by the nomads of the desert? 26. What food do they eat? 27. How is food brought to them from other countries? 28. What kind of clothing is worn by the people of the desert? 29. Why do the nomads live in tents? 30. Why is there so little plant and animal life in the Far North, and in the Sahara Desert, while there is so much of each in Central Africa? 31. Why do the Eskimos have so few kinds of food, clothing, and shelter, while we have so many?

Suggestions for study at home and out of doors

1. If you have visited some garden, or farm, in the spring, tell how the ground is prepared for planting. 2. What kinds of work are done later in the season? 3. Make a list of products that some gardener or farmer near you is raising. 4. What things that your grocer sells have come from some garden or farm? 5. Make a list of the many kinds of work that you have seen men doing, and find how many on the list have to do with food, clothing, and shelter.

SECTION II. LAND, WATER, AND AIR

1. The Land

1. Soil

Heat and rain are very important, as we have seen. But they are not sufficient alone to provide people with food, clothing, and shelter. Something else is needed also, and that is the *soil*, or dirt, in which plants grow.

As soon as the warm spring weather comes, thousands and thousands of men in our own country begin to work the soil, in gardens and on farms (Fig. 10). Indeed, more than one third of all the people in the United States live on farms. They spend their lives in raising plants, and animals that feed on plants, such as cows, sheep, hogs, and chickens. What they do not need for themselves they sell to other people. Our flour, potatoes, and sugar, the cotton for our clothing, and hundreds of other things come from the soil.

The value of the soil in our country

FIG. 10. — Men plowing a field in which wheat is to be sown.

The dense forests of Central Africa, and the fruits and vegetables of that land, all spring from its soil, warmed by the hot sun and kept moist by the rains. It is the warm soil again, watered by streams and springs, that makes life on the oases of the desert possible.

Its value in other places

On the other hand, it is the cold in the land of the Eskimos that freezes the soil and prevents the growth of trees and crops. It is the frozen soil that drives the Eskimos to the sea for food.

The dirt under your feet may seem hardly worth thinking about; but it is really one of the most important things in the world. If there were no soil, there could be no grass, no flowers, no trees. Without grass and grain there could be no cattle, horses, or sheep; in fact, few animals, such as are found upon the land, could live; for what would they eat? What, then, would you yourself find to eat? There would be no fruits or vegetables, no bread or butter, milk, or meat. We ourselves could not live if there were no soil.

Why soil is of so great importance

Since the soil is so important, it is worth while to study about it. How it has been formed, how plants make use of it, and what men do to increase its value to plants, — these are all very interesting questions that every one should be able to answer.

If you have ever made mud pies, or played in the dirt in other ways, perhaps you have sometimes wondered what the soil is made of. It has not always been dirt or mud. You know that the wood in your desk has not always been a part of the desk; it used to be a part of a tree, and has a long story to tell about itself before it was brought to your school. So, also, the soil has a long story to tell about itself. Let us see what that story is.

What the soil is made of

When mud dries upon your hands, and you rub them together, you notice an unpleasant, gritty feeling. This is caused by hard bits of something in the soil. If you rub some of this dirt upon a smooth piece of glass, you can perhaps hear it scratch the glass. This shows that these little bits must be very hard; for if they were not, they could not scratch anything as hard as glass. They must be even harder than a pin, for you cannot scratch glass with a pin.

It will help you to find out what these bits are, if you examine some

FIG. 11. — A stump of a tree decaying, or rotting.

sand. The grains of sand are tiny bits of rock, large enough to be clearly seen. When they are rubbed against glass, they scratch it, because they are very hard and sharp.

Sand is made of rock that has been broken up into fine pieces. Soil is made of rock also; but the pieces are still finer than sand. The soil that you have seen, such as that in the school yard, or by the side of the walk, or in a flower-pot, came mostly from hard rock.

How soil is made from rock

Soil has been made in several ways, which you may learn about later; but most of it has been formed by the decay of rock. You know that the stumps of trees and the boards in sidewalks, after a long time, become so soft that they fall to pieces. Perhaps you have called it "rotting," but that means the same as decaying. The picture (Fig. 11) shows such a stump.

Other things, even harder than wood, decay in much the same way, although perhaps more slowly. Bright and shiny nails decay until they become a soft yellow rust. Tin cans and iron pipes rust until holes appear in them and they leak.

You may not have thought that stones also decay, but they do. The headstones in old graveyards are often so crumbled that the letters can scarcely be read, and sometimes the stones have fallen to pieces. The decay of rock may also be seen in old stone buildings, bowlders, and rock cliffs. Have you ever noticed this?

There are several causes for this decay. All rocks have cracks in them (Fig. 12).

FIG. 12. — A rock cliff showing the cracks that extend through the rock; also, at the base of the cliff, a large pile of rock fragments that have been loosened by frost, and have fallen down the steep slope.

Usually some of these cracks are so large that they can be plainly seen; but there are many others so small that they cannot be seen without a magnifying glass. When it rains, the water steals into the cracks, and by eating into and rotting the rock, this water very slowly changes it into a powder.

What causes the decay of rock

The water may also freeze in the cracks and pry the stone apart. Perhaps you have seen iron pipes or water pitchers that have been burst by water freezing in them. This shows that water, when freezing, expands; it can even break rocks apart. Some of the pieces of rock broken off in this way are very small, others are quite large (Fig. 12).

Plants help the water to break up the rock. Their hairlike roots push into the cracks, and remain there until they grow so large that they pry off pieces.

The earthworms that one often sees on a lawn after a heavy rain also help in breaking up the rock. In order to get food, they take soil into their bodies and grind the coarse bits together until these become very fine.

Rock changes to soil most rapidly near the surface. This is because the rain, roots of plants, and earthworms can reach it there most easily. For this reason the deeper you dig into soil that is formed by the decay of rocks, the less you will find the rock changed (Fig 13); and no matter where you live, if you dig deep enough, you will come to solid rock.

Why solid rock is found beneath the soil

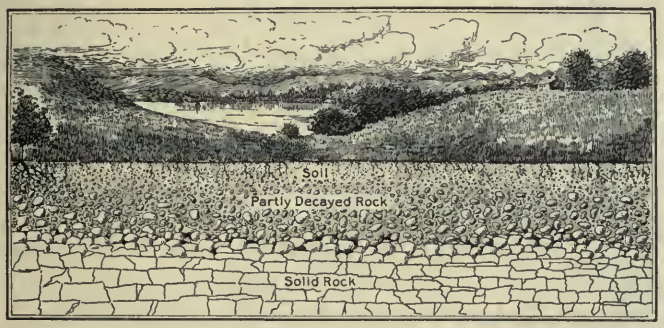

FIG. 13. — A cut into the earth. In this figure notice the *soil* on top, partly decayed rock lower down, and *solid rock* below that.

Figure 14 shows the soil a little less than two feet deep. Sometimes there is much more than this, and men may even dig deep wells without finding rock. But in many places there are only a few inches of soil, and in others there is not enough even to hide the rock.

Why the soil is of different depths

One reason why the soil is deeper in some places than in others is that some kinds of rock decay much more easily than other kinds. Another reason is that in some places the rain washes the bits away as fast as the rocks crumble. This may leave the rock quite bare in one place, and make very deep soil in the places where the broken bits have been brought together

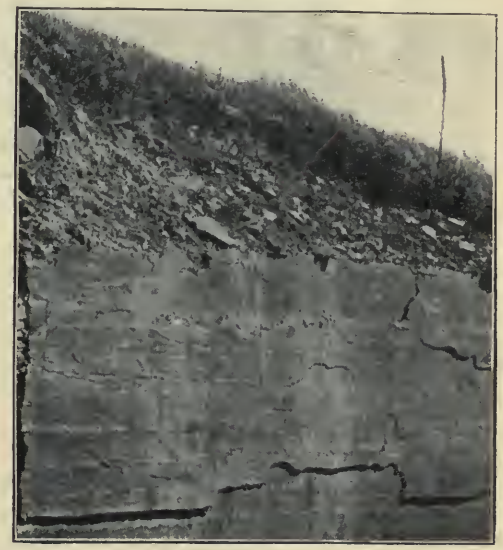

FIG. 14. — A cut in the earth, showing the soil resting on the solid rock.

Having learned how the soil is formed, let us see how plants make use of it.

An acorn planted in the soil sprouts and sends up a tiny stem. This grows taller and taller, and sends out one branch after another until the little tree becomes a mighty oak. What a lot of material has been used to make such a tree! Where has it all come from?

The use that plants make of the soil

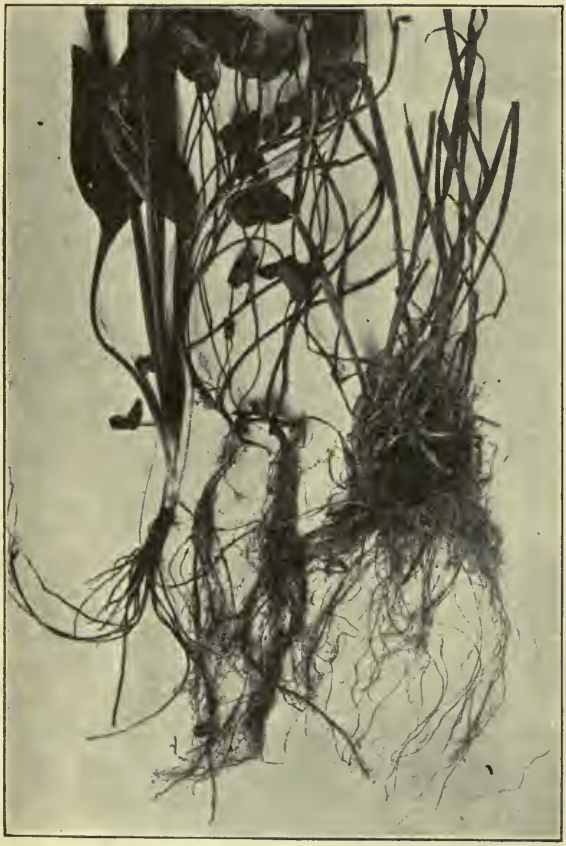

FIG. 15. — A photograph of four weeds, showing the great number of long, hairlike roots.

Some of it has been taken out of the air by the leaves, but most of it has been taken from the soil by the roots. While the stem, branches, and leaves have been growing above ground, the roots have been growing underground, where we cannot see them. These roots have spread out in all directions (Fig. 15) and have extended deep into the soil, in search of things needed by the tree.

Dig up a weed in order to see how its roots have pushed their way in and out through the soil.

Roots have no eyes, to be sure; but they burrow about, and in their own way find what they need. It is not the large or old roots, however, that do this. It is the work of the young roots, many of which are not much larger than hairs (Fig. 15).

The value of the hairlike roots

If you dig up a weed, or any other plant, very carefully, you will see that it has a great many such hairlike roots. It is these that take the materials from the soil, while the older, larger roots merely pass these materials on to the part of the plant above ground. Every tree, every blade of grass, every weed and vegetable depends upon such tiny roots for its life.

One of the things that the roots of plants seek in the soil is water. Plants need water as much as you do; and a plant in a flower-pot will soon wither and die if it is given no water. Try it, to see for yourself. That is the reason we water our lawns during dry weather in summer.

What plants take from the soil

Roots take from the soil other substances called *plant food*. This plant food is a part of the soil itself, and is as necessary to plants as food is to you. It is carried, in the sap, to all parts of the plant and used to make stems, leaves, flowers, fruit, and seeds, as the blood in your body is used to make bones and flesh. Every blade of grass and every limb of a tree contains some of this

plant food that was once a part of the rocks. When a piece of wood is burned, some of this rock material is left behind in the ashes.

Every person, even, has some plant food in his body; your bones and teeth are partly made of it. But you did not take it directly from the soil; the plants took it for you, and you received it from them in the bread and other foods that you have eaten.

All plants do not need the same kind of food, any more than all animals do. Horses eat hay and grain; dogs eat meat. So, also, some plants need one kind of food, others another. These various kinds of plant food are found in the different kinds of soil.

Why many kinds of soil are needed

There are many different kinds of soil. Sometimes the rock has crumbled into very small bits, making a fine-grained soil; again the pieces are so large that the soil is coarse. In fact, in some soils the pieces of rock are so large that some of them are pebbles. Then, too, there are many kinds of rock, such as granite, marble, and sandstone; and when they crumble they make different kinds of soil.

What causes different kinds of soil

In some places the soil has plenty of plant food in it. To raise good crops in such soil, men have to do nothing beyond plowing, planting, and hoeing. Central Africa has a great deal of that kind of soil, and so has the United States. Soil with plenty of plant food in it is said to be rich, or *fertile*.

Fertile soil

There is also much soil that has little plant food in it, and that is said to be poor, or *sterile*. One reason for sterile soil is that the rock from which the soil has come may contain little plant food. On that account one farm may be much more sterile than another next to it.

Sterile soil

Soil that was once fertile may become sterile, because plants are always taking some of the plant food out of it. They must do this in order to grow. When weeds and trees fall and decay on the spot where they grew, they pay back what they took away. But if plants are carried away from the spot where they grew, there is danger that fertile soil may be made quite sterile.

How fertile soil may become sterile

This often happens. Farmers send away their wheat to make flour, and take their corn, hay, and oats to market. Indeed, they have to do this in order to make a living. Some farmers have sent their crops away year after year, without putting anything back in the ground to take the place of what was carried away. The result is that the soil has become really worn out, or sterile, and the farmers are no longer able to support their families on such land.

The wise farmer takes care to put some plant food back upon the soil, to replace what his crops have taken from it. Then he can continue to raise good crops. That which he puts back upon the soil is called a *fertilizer*, because it keeps the soil fertile. People in the city often spread fertilizers on their lawns, to feed the grass and thus make it grow.

How this danger can be avoided

Millions of dollars are spent in the United States every year for fertilizers. If this were not done, the crops would not be nearly so valuable. Then the farmers would suffer; and since we all depend upon the products which they raise, we would all suffer. Farming is

the most important industry not only in our country, but in the whole world. Therefore, what is important to the farmer is important to every one.

Review Questions

1. Why is the soil in our country so valuable? 2. What about its value in other places? 3. Why is the soil one of the most important things in the world? 4. What is the soil made of? 5. How has it been made? 6. What causes rock to crumble? 7. How does it happen that solid rock is everywhere found beneath the soil? 8. Why is the soil of different depths? 9. What use do plants make of the soil? 10. What is the work done by the hair-like roots of plants? 11. Name two things that plants take from the soil. 12. Why is it important that there should be different kinds of soil? 13. What causes the different kinds? 14. What is meant by *fertile* soil? 15. By *sterile* soil? 16. How may fertile soil be made sterile? 17. How can such danger be avoided?

Suggestions for study at home and out of doors

1. Find a place where men are digging a ditch, or a cellar, to see how the dirt looks below the surface. 2. Find a bowlder, cliff, or old stone wall, that is crumbling away. 3. Collect several different kinds of soil. 4. Find out what trees and vegetables grow best near your home. 5. Visit a greenhouse to find out what kind of soil is used there, and what is done to keep it fertile. 6. Make a drawing of the roots of some weed that has been carefully dug up.

2. Plains

If the soil that rests on the rock had a smooth and level surface like a floor, it would be unfit for farming. For the water, after a heavy rain, would then stand in a thin sheet upon the ground. This would drown the crops and prove unhealthful for both people and animals.

Why gently sloping land is the best for farming

Land with steep slopes is also unfit for farming. The rains wash away much of the dirt on these slopes, until only a rough, thin soil is left; sometimes even the bare rock is uncovered. The crops, too, are often washed away from such steep slopes by the heavy rain. It is very difficult, also, to do the work of planting, plowing, and harvesting on a steep hillside.

Fig. 16. — Farmers cutting wheat on the broad plains of the West.

Land that has gentle slopes is better for farming. The water runs off more slowly, without washing the soil away or injuring the crops. More of the water soaks into the soil, leaving it in a condition for the farmer to work, or *cultivate*, easily.

Land of this kind, with slopes so gentle that it is nearly level, or slightly rolling, is called a *plain*. A very large

part of our country consists of such plains, and this is one reason why the United States is one of the finest farming countries in the world (Fig. 16).

The extent of plains in the United States

If you were to cross our country on the railroad you might travel for two or three days over nearly level plains, with no mountains, and not even any high hills, in sight. On either side of the track you might see one farmhouse after another, each surrounded in summer by fields of waving grain, and by green pastures in which horses, cattle, and sheep were feeding. Now and then the train would pass through a village or a city; but everywhere else, for hundreds of miles, you would find only fertile farms.

In many places, even from a train, one can easily see that there are slopes on this great plain, down which the water runs freely. But in parts of the plain the slopes are so gentle that the surface seems to the eye to be perfectly flat. Yet the fact that the water runs off, proves that even here the land has a slope.

The importance of slopes

Here and there, however, the surface is so level that the water does not all run off, but makes wet places, called *swamps*. There are thousands of swamps in our country, and it is quite common for a farm to have one or more of them upon it. Swamp land cannot be cultivated until it is *drained;* that is, until the water is made to run off. Drainage of such land, therefore, becomes a very important matter.

Swamp soil is usually very fertile. For this reason, when there is no natural slope to carry off the water, men often set to work to make one. For this purpose they dig ditches with sloping bottoms that allow the water to run away to some lower place.

What is done with swamps

FIG. 17. — An open ditch dug through a swamp in order to drain off the water.

Sometimes the ditches are left open, as in the picture (Fig. 17). More often tiles are laid along the bottom, forming a kind of pipe, and then the earth is thrown back. The water finds its way into these pipes and thus flows away. Such drainage is expensive, but it usually pays well, for it makes good fertile farm land out of land that before was useless.

Definitions

A *plain* is a nearly level, or gently rolling, part of the land.

A *swamp* is wet land from which the water does not run off freely.

Review Questions

1. Why is gently sloping land the best kind for farming? 2. What about the extent of such land in the United States? 3. Why are slopes of great importance? 4. Why are swamps drained? 5. How is this done?

Suggestions

1. Find some ground near your home that seems nearly level. In what direction does it really slope? 2. Where is the longest slope in your neighborhood? Would you call it a part of a plain? Why? 3. Find out whether or not there are any swamps near you. If so, tell how you might plan to drain one of them. 4. Why should a farmer use tile and fill up a ditch, rather than leave it open?

No matter in what direction you look, in a hilly country, the scenery changes. The view from the top, or *summit*, of a hill that requires only a few minutes to climb, is very different from the view at its base (Fig. 18). Can you explain why?

The higher hills, which may require several hours to climb, furnish even finer views. From the summit of such a hill one can see hilltop after hilltop, with valleys between, stretching out for miles in the distance. The valleys wind in and out among the hills, with perhaps a rugged cliff too steep to climb on one

FIG. 18. — A view in a hilly country, with a lake in the valley. Here some of the slopes are too steep for farms, and are, therefore, still covered by forests.

3. Hills and Valleys

The beauty of a hilly country

Plains are usually so level that one can see for miles upon them in every direction. The surface is so flat that, no matter where one looks, one sees the same kind of scenery.

It is very different in a region where the slopes are steeper. The higher parts are called *hills*, and the lower parts, between the hills, are called *valleys*.

side, and a long wooded slope on the other. In the bottom of the valley one can possibly see a brook or a river winding about. If you live among hills, describe some of the walks and views that you have enjoyed.

Uses made of hills

The soil on hills may be deep and fertile; and then, even though it is not so easy to cultivate the ground, the hilly land, like the plains, is used for farms.

Many people build their houses upon

hills in order to enjoy the beautiful views and the cool, fresh air there in summer. Do you know of any such house near you?

Another and even more important reason is that it is more healthful to live on high ground. Where the land is low, the slope is often so gentle that the water cannot flow off readily. Houses in such places often have cellars that are damp, and the people living in such houses are in danger of fever, and of other kinds of sickness, caused by this dampness. But from a hillside, the water runs away quickly, so that the ground there soon becomes dry even after a heavy rain.

In large cities, where land is very expensive, people build almost everywhere. The low places are carefully drained like swamps on farms; drain pipes, or sewers, being used to carry off the water.

The use of valleys for roads and railways

The bottoms of valleys, unlike hills, usually have gentle slopes. This fact has had a great influence upon the roads of every country (Fig. 20). For it is easier to travel in a valley than to go up and down across the hills. On that account, when white men first came to this country, and settled among the hills, they built their main roads in the valleys. The same thing is still done.

Railroads have also been built in the valleys. Trains cannot be drawn up steep slopes, and therefore the railroads must either cut through the hills or else follow the valleys. The latter is much the cheaper plan, so that in a hilly country railroads wind in and out, often making sharp curves in order to follow the valleys (Fig. 20).

FIG. 19. — The ruins of castles, built on the crests of steep hills in the Rhine Valley in Germany.

In times past, when war was more common than now, men built great castles, with thick walls, on the summits, or crests, of hills (Fig. 19). From these they could look out over the country for a long distance, and spy approaching enemies in time to prepare for them. Besides this, the steep sides of the hills were difficult for the enemy to climb.

Some of the Indians used to build their towns upon the tops of steep hills, in order to be safe from other Indians. For the same reason the early settlers in New England placed their churches and villages upon the hilltops. At present, hills are little needed for protection against enemies.

FIG. 20. — A road and a railway winding up a mountain valley.

Where the country is more nearly level, as upon a plain, it is easier to travel in a straight line. But even there both the wagon roads and the railways are often built round small hills, rather than over them.

The use of valleys for homes

While many people build their houses upon hills, many more live in the valleys. Farmers often settle in the valleys, because the best soil is usually found there. The soil is washed into the valleys by the rains, and is therefore deeper than on the hill slopes. There is also more moisture in the valleys, so that the crops grow better there.

Another important reason why people live in valleys is the fact just mentioned, that the roads and railways are so often built there. Rivers large enough for boats are also found in many of the larger valleys. Can you give reasons why people choose to live along such highways of travel?

It is because valleys are such important highways that many of our towns and cities have grown up in them. Some of the largest cities are found where two or more valleys come together. In such places roads and railways, coming from different directions, meet, and thus make good centers where people may trade, and from which and to which they may ship goods (Fig. 21).

When we think of a valley, we usually

FIG. 21. — Notice how the roads and railways, following the valleys, meet at a central point. Because this is a center, a city has grown up here.

have in mind a small one, across which a person can easily see, for the valleys that one commonly sees are both narrow and short.

The size of valleys

But valleys are of all sizes. Many are so narrow that a person can easily

Fig. 22. — Trace the *divide* on the roof of this house.

toss a stone across them. Probably there are some of this kind near your home, and if you search you may find one.

Other valleys are several miles across, and some are far larger. Indeed, there are some so great that one could not travel their whole length or width, even if he were to spend all day and all night upon a fast train. There is one such in our country, called the Mississippi Valley, which is more than three thousand miles long, and nearly as wide.

Valleys as large as this, of course, have very gentle slopes. On that account many people living in the Mississippi Valley scarcely realize that they are in a valley. The Mississippi River flows through the lowest part, and the homes of many people are so far from that river that they may never have seen it. The land

The Mississippi Valley

all about them is so level that it does not seem to form a part of any slope. It is, in fact, a vast plain. Yet, when the rain falls there, it flows on and on, in brooks and rivers, till it reaches the great river, thus proving that the plain is a part of the Mississippi Valley.

The slopes of this valley are not all smooth and even. There are smaller valleys of many different sizes within this great valley, and some of them are hundreds of miles long.

The more important valleys have names, just as people have; for instance, there are the Mississippi Valley, the Hudson Valley, and the Connecticut Valley.

How one valley is separated from another

Can you name others? It is important to have some way of fixing the boundaries of such a valley, so that one can know where it begins and ends, and how much land is included within it. Usually this is easily done.

When the rain falls upon the roof of a house (Fig. 22), the water is divided along the highest part, some flowing

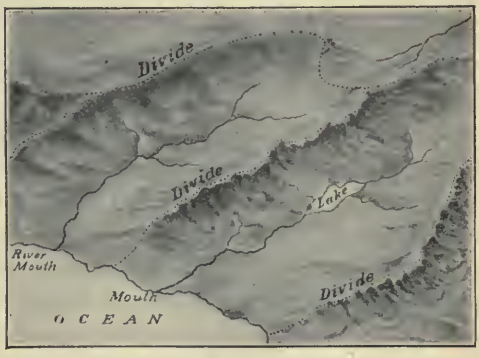

Fig. 23. — A map to show the divides between valleys. Trace the divides.

down one side, some down the other. Water falling upon the highest land between two valleys is divided in a similar manner. Because the water

parts, or divides, at the highest place between two valleys, this place is called a *divide*, or *water parting*, or sometimes a *watershed*. The dotted lines in the picture (Fig. 23) show some divides. Notice how irregular the lines are.

A divide sometimes stands out as sharply as on the roof of a house. In other places it is difficult to find, because the land is so nearly level. Can you point out such a place in Figure 23?

Since the divides are the boundaries of the valleys, it is easy to determine how far it is across any valley. How would you do it?

The divides on the two sides of the Mississippi Valley are many hundreds of miles apart. But there are, no doubt, some valleys near your home whose divides are not one hundred feet apart. See whether you can find one; and if you do, try to trace its divides.

People sometimes speak of the "everlasting hills," but they are not everlasting. The hills and valleys that you have seen were not always there, and will not remain forever. They have all been slowly made. Let us see how this has been done.

How hills and valleys have been made

When it rains slightly, the water soaks into the soil and disappears; but when there is a heavy rain, not all of the water sinks into the ground. Some begins to flow away. One little stream, perhaps less than an inch wide, begins at one point; another joins it; soon several of them unite; and after a little while a good-sized brook or creek is formed.

Have you not seen this flowing water in the school yard, in the roads, or on the sides of hills? If you have, you have surely noticed that the water did not flow off without taking something with it. It was muddy. This means that soil had become mixed with the water and was being borne away by it. Every heavy rain bears along much soil, cutting little channels, washing out roads, and perhaps even destroying the beds of railways, so that trains must stop running for a time.

FIG. 24. — Little valleys cut in the soil by the rains.

During such a rain little channels, or *valleys*, are carved in the soil, leaving tiny *hills* and *ridges* between (Fig. 24).

No doubt you have seen these formed many times. If not, you can easily make them by pouring water from a sprinkler upon a pile of loose dirt.

In most places there are many heavy rains every year, and in a lifetime their number is very large. During many hundreds of years, then, the water could wash away an enormous amount of soil and rock. This soil the large streams and rivers carry away to the sea. It is by such very simple means that even deep valleys have been formed, with the hills between them. It has all been done in much the same way as the rain water cuts the tiny channels in the soil of the school yard.

What a change water must have made in the surface of the earth during the thousands of years that have passed! No doubt there were hills and valleys in the very beginning; but every year these have been slowly changing, so that they are now very different from what they once were. After many more years they will be very different from what they are now, for they are even now slowly changing.

This is the way in which most hills and valleys have been formed. Some of the very largest valleys, however, like the Mississippi, have not been made entirely by running water. They have been partly caused by the sinking or the rising of the land. We shall learn more about this when we study about mountains.

Definitions

A *valley* is the low land between higher lands, as between hills or mountains.

A *divide* (also called *water-parting* or *watershed*) is the place between two valleys where the rain water parts, or divides, that on one side flowing into one valley, that on the other flowing into the neighboring valley.

Review Questions

1. Why does a hilly country look more attractive than a plain? 2. Of what use are hills? 3. Show how valleys are of use for roads and railways. 4. Why are they of use for homes? 5. What about the size of valleys? 6. Tell about the Mississippi Valley. 7. How is one valley separated from another? 8. How have hills and valleys been made?

Suggestions

1. Where is the highest hill near your home? 2. What views do you most enjoy in your neighborhood? Describe them. 3. Find pictures of castles, showing their location on hills. 4. Find the divide, or watershed, of some valley near you. Trace it as far as you can. 5. Watch the water carrying off soil after a rain. 6. Find a washout after a heavy rain. 7. Show that streets and roads are so made that they have a watershed. Why is that done? 8. Do you know any roads or railways that follow valleys and wind about among the hills? If so, tell about them. 9. Make a drawing showing the appearance of a hilly country.

4. Mountains

Hills are seldom more than a few hundred feet high; but in some parts of the world the slopes rise thousands of feet. Such high places are called *mountains*.

You may never have seen mountains, but you have certainly seen something that looks quite like them. Often, on a summer evening, the sun sets behind great banks of clouds that reach far up into the sky. Some of them have rough, steep sides and great rugged peaks; others have more gentle slopes and rounder tops. Often there are many of them together, and they appear so real that it seems as if one might climb their sides, if he could only reach them.

Appearance of mountains

This is very much as snow-covered mountains appear in the distance. In fact, in a mountainous country one must often look carefully to tell whether he sees real mountains or clouds only.

FIG. 25. — A view in a region of low mountains, with forests covering the lower slopes.

The mountains in Figure 25 are much like hills, except that they are larger. They are two or three thousand feet in height. Some mountains are so low, and their slopes so gentle, that one can easily climb to their tops. Such mountains are often called hills; but many mountains are from two to three miles in height. The tops, or *peaks*, of these may rise far above the clouds, and are often wholly hidden by them.

The size of mountains

FIG. 26. — Snow-covered mountain peaks in the Alps, many thousands of feet high.

Usually where there is one mountain peak, there are others in sight (Fig. 26). They often extend in lines, forming what is called a *mountain chain*, or a *mountain range*, which may be hundreds of miles in length. Besides peaks, there are many deep valleys and steep slopes in such a mountain chain.

Perhaps you know that it is colder on the summit of a high hill than at its base. When going to the top of the Washington Monument, which is five hundred and fifty feet high, if one

The temperature on mountains

has a thermometer one finds that it is about two degrees cooler at the top than at the base. One might not notice any difference in temperature when climbing low hills, but it is easily noticed on high ones. If your home is near such a hill, you can prove this.

FIG. 27. — A mountain on whose summit snow has just fallen, while no snow fell at its base.

People who live among high hills observe that it often snows upon their summits (Fig. 27), while it rains in the valleys below. How can you explain this?

Many mountains rise so high that it is *much* colder at the summit than at the base. In fact, it is so cold on very high mountains that the snow never quite melts away. No rain ever falls there; but it snows instead, in both summer and winter, and it is far too cold for trees to grow. Such mountains, therefore, are always white with a thick blanket of snow.

Even in hot Central Africa some of the mountains rise so high that they are always covered with snow. On these peaks it is as cold as in the land of the Eskimos, although the Negroes, living at the base of the mountains, need hardly any clothing.

Because of the cool climate and beautiful scenery, many people spend part of the summer among the mountains. Even the lower mountains, which are covered with woods all the way to the top, and have no snow in summer, are so much cooler than the lowland that they often attract thousands of visitors during hot weather.

The use of mountains as summer resorts

Railroads now lead to many of the mountains, and sometimes even go across them. Following a valley, such a road rises higher and higher until it comes to what is called a *mountain pass* (Fig. 28).

FIG. 28. — A railroad train crossing a pass in the lofty, snow-covered Alps.

This is nothing more than a valley between two mountain peaks. Then, after crossing the pass, the railroad leads down a valley on the other side. Or, quite often, if the way to the pass is too steep, a railroad winds about, in many curves, until it can climb no higher; then it tunnels directly through the hard mountain rock. Some of the tunnels in mountains are several miles long, and have several thousand feet of rock directly overhead.

There are often good roads in the mountains, and some of the visitors amuse themselves by driving. There are also paths in different directions, leading to points of interest; and many people spend a part of their time in mountain climbing.

Why mountain climbing is difficult, and even dangerous

This sport, however, is often difficult and sometimes dangerous. It may not seem hard to climb to the top of a mountain, but it usually is.

In the first place, a long distance must be traveled. Most mountains are so steep that one would grow very tired climbing directly up their slopes; therefore, a much longer, zigzag path is followed. In addition to this, there may be some steep cliffs, or *precipices* (Fig. 29), that could not be climbed even if one wished to do so; and it is necessary to travel round these, to find a place where the slope is less steep.

For these reasons it may be necessary to walk ten miles, or even more, climbing uphill all the time, in order to reach the top of a mountain only a mile high. One would need to stop often to rest.

There is danger, at some points, in climbing very high mountains. One may lose his way, or, since the path is often wet and rocky, with perhaps a steep precipice close to it, one's foot may slip, causing him to fall upon the rocks far beneath. Or great masses of stone and snow may suddenly come crashing down the mountain side, destroying everything in their path. The dangers to be met in climbing high mountains are shown in the following description.

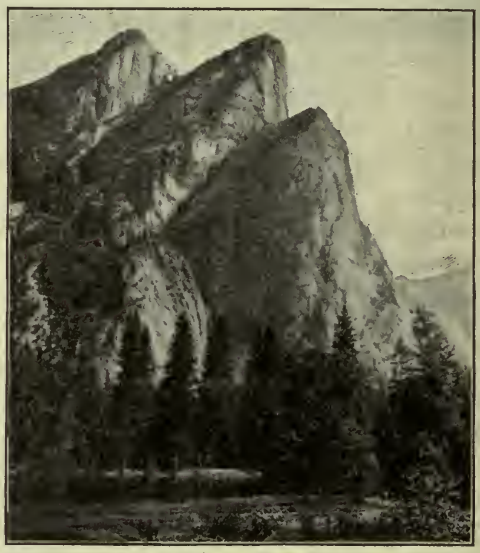

FIG. 29. — Steep rock precipices, up whose face one cannot climb.

The climbing of Mont Blanc, in Switzerland

Many people cross the ocean to visit the Alps mountains in Switzerland. Mont Blanc, one of the best-known peaks in the Alps, is nearly three miles in height. It is so difficult and dangerous to climb this mountain that persons wishing to do so must employ guides, to show them the way and help them over the difficult places.

The round trip usually takes two nights and three days; and as there is no place to obtain food, it is necessary

to carry it. Overcoats and blankets also are needed; for even though the journey be made in the hottest summer weather, it is bitterly cold upon the mountain top.

Suppose that we are making such a journey. We start early in the morning, so as to have a long day. Each of us carries a few light articles, but the guides and porters take most, for they are strong and used to climbing. At first we walk along a pleasant path in a beautiful wood; a house is now and then passed, and a green field perhaps; but soon there are no more houses and fields, and we meet no people. The trees become smaller and smaller, until the line is reached above which it is so cold that no trees can grow. This is called the *tree line*, or *timber line*.

From this point on, no plants larger than bushes are seen, and after a while even these disappear. Meantime the soil and grass have become more scarce, while here and there banks of snow are found in the shady hollows. Soon we have climbed to the *snow line*. This is the line above which snow is found all the year round. Now, no matter in what direction we look, rocks and snow are everywhere to be seen, and the snow is often *hundreds* of feet deep.

What a wonderful view is before us! It repays us for all the hard climb. We look down upon the woods through which we have just passed, and over them to the deep valleys, with green fields, pretty houses, and villages far below us. Beyond are seen other steep mountains upon the opposite side of the valley.

A guide takes his place in front of us, and often tells us to stop while he goes ahead to examine the way. It may be that the snow has bridged over and hidden a deep and narrow chasm, and if we were to step upon this snow bridge, we might break through and fall a hundred feet or more.

Sometimes the guides lift us over a dangerous place; and when it is steep or slippery, they fasten all the members of the party together with ropes, so that if one falls, the others may hold him (Fig. 30).

As we advance higher and higher, it is often necessary to take a narrow path on the steep side of the mountain. On the right we can look hundreds of feet almost straight downward; on the left are huge stones and masses of snow almost directly overhead.

The snow sometimes slips, forming *snow slides*, or *avalanches*, which are very dangerous. They come tearing down the sides of the mountains with a terrible roar, at times burying whole villages beneath them. You have seen the same thing, on a much smaller scale, when snow has slid from the roofs of houses on warm winter days.

FIG. 30. — Mountain climbers, fastened together by ropes, on the way to the top of Mont Blanc.

After one night spent in a little house about halfway up the mountain side (Fig. 31), and after much hard work on the next day, we reach the summit. Here, in spite of our heavy wraps, we are all shivering; for upon high mountain tops there are fierce winds which seem to go through even the thickest clothing.

On this barren mountain top there are no birds, no trees, no grass, — nothing but snow and rock (Fig. 32). But if it is a clear day and there are no clouds clinging to the mountain sides below us, we may be able to look down into the beautiful green valleys only a few miles away. There the birds are singing, flow-

FIG. 31. — Rest house on the slopes of Mont Blanc, above the snow line.

ers are blossoming, and men working in the fields find it too warm.

Other uses of mountains

Perhaps you already know that the rocks inside the mountains sometimes contain gold and silver. Iron, lead, and other *metals* are also obtained there. The metal in rings, watches, and silver coins, and even the iron parts of your school desk, may have come from the rocks of some mountain.

Rock that contains metal is called *ore;* and it may look so much like common rock that you might not note the difference. You might have a very valuable gold ore in your hand and not know that it contained any gold. In order to get the metal out of the ore, much work is necessary. Many men in mountainous countries are employed in mining ore and in getting the metal out of it (Fig. 33).

The trees in the mountain forests are also valuable. The most common kinds are evergreens, such as the pine, hemlock, and spruce. These are green even through the winter, and can live on the cold mountain sides as far up as the timber line (Fig. 34). The land upon a moun-

FIG. 32. — The summit of Mont Blanc, always covered with a deep coat of snow.

tain side is usually too steep and rocky for farms; but even where there can be no farms, trees may grow, covering the mountains for miles and miles with dense forests. These trees may be cut down and sawed into lumber, from

FIG. 33. — In these buildings metal is obtained from the ore that is mined in the mountain rocks far below the surface.

which all sorts of wooden articles are made. Possibly the very seat in which you are sitting was once part of a tree that grew on the side of a mountain.

Mountains are of further use because of the water they supply. We have already seen that there is much ice and snow upon some of them; and that upon the higher mountains there is so much that it never melts away, no matter how hot the summer may be.

During hot weather, many streams in the plains dry up; but at such times the ice and snow of the mountains melt all the faster. Then the streams which flow forth from these mountains are even more swollen than usual. This water may run along for many miles, until it finally reaches towns and cities where people need it to drink and for other purposes. Do you know of any city that gets its water-supply from such a river?

You have learned that most hills have been slowly made by running water, that cuts out valleys and leaves high places between. Most mountain ranges have *not* been made in this way. They are really parts of the land that have been slowly raised, until some portions are much higher than the surrounding country. When mountains are thus raised, the

How mountains have been made

FIG. 34. — The forest-covered slopes of lofty mountains, that shut in a mountain valley. Point out the timber line.

rocks are bent, broken, and folded in a very irregular way (Fig. 35). You can imitate this folding of the mountain rocks by bending, or crumpling, a number of sheets of paper. When the rocks of mountains are folded, the crum-

pling extends for a great distance, sometimes even for thousands of miles. Such a region of folded rocks, a hundred miles or more wide, and perhaps a thousand miles or more long, is called a *mountain system.*

Of course running water cuts valleys in a mountain region as well as in a hilly country. In fact, most of the valleys and many of the peaks and ridges in mountains have been carved out by running water. The land is slowly raised by folding, and then valleys are cut into it by the water that flows down the slopes.

FIG. 35. — Beds of rock, in the mountains, that have been bent up in an arch when the mountains were raised.

About how to study

While it is well, first, to read even several pages of the text without pause, as before stated, it is necessary in further study to stop here and there to think over what has been read.

For this purpose some stopping places are better than others. Probably the best stopping place, for every page or two, is found at the end of the answer to each question that is suggested in the headings at the side of the page. At this point, each time, the thought turns to another topic, and it is therefore a good place to make a stop. One can then look back over what he has just read, or think it through without looking at the book.

In preparing for recitation it is not necessary to try to remember the *exact words* of the book. In fact, it is much better to tell in one's own words what has been learned, just as a person does in writing a letter.

Definitions

A *mountain* is high land, where masses of rock have been pushed up above the level of the surrounding country.

A *mountain peak* is a high part of a mountain. It is a sort of large hill in the mountains.

A *mountain range* is a long, rather narrow belt of mountain country.

A *mountain chain* is a group of mountain ranges, one beside the other, and often nearly in a line.

A *mountain system* is an even larger group of mountains, often including two or more mountain chains.

A *precipice* is a steep rock cliff, often found in a mountainous country.

An *avalanche* is a great mass of snow, ice, or rock falling down a mountain side.

The *timber line* (or tree line) is the line above which no trees grow.

The *snow line* is a line above which snow remains all the year round.

A *mountain pass* is a gap, usually a valley, across the crest of a mountain range.

Review Questions

1. Describe the appearance of mountains. 2. What about the temperature on mountains? 3. Why are mountains of use as summer resorts? 4. Why is mountain climbing difficult and sometimes dangerous? 5. Tell about the climbing of Mont Blanc. 6. State other uses of mountains. 7. How have mountains been made?

8. What is meant by a plain? Swamp? Valley? Divide? Mountain? Mountain peak? Mountain range? Mountain chain? Mountain system? Precipice? Avalanche? Timber line? Snow line? Mountain pass?

Suggestions

1. If you have made a visit to the mountains, describe to the class what you saw. 2. Watch for clouds that resemble mountains. 3. Make a collection of pictures of mountains. Note the timber line, the snow line, and other points of interest. 4. Rep-

resent a mountain by the use of sand, stones, twigs, and chalk dust. Show the forests and the timber line; the snow line; precipices. 5. Ask some one who has climbed a mountain to tell you about it. 6. Write a story relating the adventures you might expect in climbing a mountain. 7. Describe some of the views you would expect to enjoy.

2. Water

1. Rivers

We have seen how very important valleys are; and we have also learned that they have been formed by the work of running water. We shall next study the running water that has carved out the valleys, and that makes the rivers.

How rivers begin

Every heavy rain causes the water to collect here and there, and to flow down the slopes. At first only tiny rills are formed, but these unite to make little streams and brooks. The brooks and small streams, in turn, unite to form rivers. Thus rain alone may cause a river; but as soon as all the rain water runs off, such a river would become quite dry if there were not water from some other source.

Rivers usually have a more regular supply of water. Some of them, as we have seen, start in the high mountains, where the snows never entirely melt away. Others have their beginnings, or *sources*, in lakes and swamps.

It should be remembered, too, that there is a great deal of water in the ground, for some of it sinks into the earth during every rain. It is this water that men find when they dig wells. The underground water trickles slowly through the soil, and through crevices in the rocks (Fig. 36), often bubbling forth as a spring, weeks after it has fallen as rain somewhere else. Many rivers have their sources in such springs, and most large rivers receive water along their courses from hundreds and even thousands of them.

Let us take a journey from the source of a river to its lower end, or *mouth*, and

Fig. 36.—Icicles formed in winter where water from underground slowly oozes out from cracks in the rock.

see how it changes. Our river has its source in a small spring in the mountains, where the clear, cold water bubbles out of the ground at the base of a rock cliff. For a short distance it flows through a grassy meadow (Fig. 37), and is so narrow that you can easily step across it. The water is so clear that you can see the speckled trout swimming about in a deep hole near one side, or *bank*. A smaller branch, or *tributary*, enters the brook from another small valley, and makes it somewhat larger and deeper.

How a river changes and grows as it advances

1. Its upper part

Soon the brook leaves the meadow and begins to tumble down a steeper slope. Here it changes greatly. In some places it is narrow and deep; in others, broad and shallow; here it flows swiftly, there slowly.

FIG. 37. — A meadow brook — that later becomes a river — near its source.

We put a toy boat upon the water. It floats along quietly for a time, and then, coming to a swift part of the current, called a *rapid*, it is whirled along roughly and upset. We rescue it and set it right again, but soon it comes to a place where the water falls several feet from the top of a ledge (Fig. 38). In tumbling over this *waterfall* the boat is again upset, and dashed against the rocks.

FIG. 38. — Here the water, shut in by steep walls, leaps from ledge to ledge, each time forming a waterfall.

As the water rushes along, beating itself into foam, it is here and there joined by other tributaries, some very small, others nearly as large as the brook itself. Thus the stream gradually grows broader and deeper.

Often the water must rush around, or leap over, large bowlders that lie directly in its path; and often it falls directly downward for many feet with a roar. The stream is now in a deep gorge, with the rocky cliffs extending high on each side, and shutting it in like walls (Fig. 38). It seems quite helpless, with the great, hard rocks all about it. Yet it is really getting the better of this rock, for pieces of stone are often loosened and made to fall

FIG. 39. — The stream, shut in by towering cliffs. The large bowlders in its bed have fallen from these cliffs.

from the steep cliffs into the water. Then the torrent hurls them against one another, and grinds them against the bottom, or *bed*, of the stream until they are worn into smooth, round pebbles. These pebbles are borne on downstream, and are slowly ground up into grains of sand and bits of clay.

The bed of the stream and the rock cliffs by its side are ground away at the same time. It is this grinding that has made the gorge so deep and caused its sides to rise so steep and so high. The scenery here is wild and grand, with towering cliffs on either side (Fig. 39). Now it is too difficult to follow the stream, and we leave it, to join it again many miles below.

2. Its middle part

Here the river has left the mountains and flows in a broad valley through a hilly country. Some of the slopes are steep and covered with forests; others, more gentle, are cleared of trees and dotted with farms, farmhouses, and barns.

The current is not so swift now, although there are still some rapids and falls; and instead of rocky cliffs the banks are low (Fig. 40). In fact, in some places these are not much higher than the water. Here and there a tributary, itself almost a river, pours its flood into our stream.

It has now been many days since this water left the mountains. The river has become so deep that we cannot touch

FIG. 40. — The river is now large, and its banks are low and bordered by farm land.

its bed with a long pole, and so wide that bridges are needed to cross it (Fig. 41). We can now drift along easily in a boat, watching the men at work in the fields, and the towns and villages that we pass.

At one point, however, the current grows swifter, and finally the water tumbles in a great fall. We must leave the river at this point and pass around the fall. Here is a large city with many mills and factories. From this point on, the stream is so broad and deep that large steamboats can travel upon it; it has now become a great river.

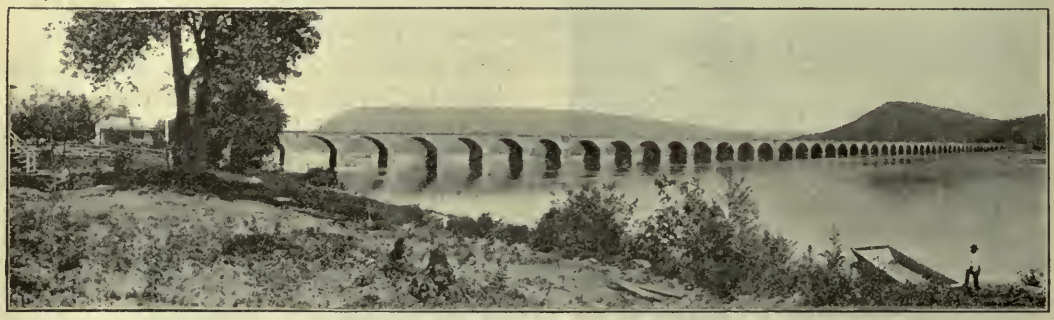

FIG. 41. — Here the river is so broad that a very long bridge is needed to cross it.

It is still several hundred miles to the river mouth, and since other rivers, both large and small, continue to join it, it steadily grows deeper and broader. The banks become lower, and they are occupied by many towns and cities, with farms between.

3. Its lower course

In this part of its course there are no rapids and falls. Indeed, the current has greatly changed. In the mountains the water rushed rapidly and noisily onward, dragging along bowlders and pebbles; in its middle part it flowed fast enough to carry only sand and mud; but now the current is so gentle that it can carry only the finest bits of rock mud. These bits are so tiny that, if you were to place some of the muddy water in a glass, it would take hours for all of them to settle and leave the water clear.

At last we are approaching the river mouth, toward which the water has been steadily flowing for weeks. The river is now a full mile in width, and moving very slowly. It never dries up, because there is always a supply of water from its thousands of springs, and it drains so great a country that rain is nearly always falling into some of its hundreds of tributaries.

Not only river boats, but ships from the ocean are now passing up and down the river. Now the water divides into several streams, each flowing into the ocean along a separate course (Fig. 43). Each of these pours its fresh water into the salt water of the sea, and beyond their mouths no land is to be seen, — nothing but water everywhere (Fig. 42.)

How other rivers differ from this one

Other rivers may differ from this one in many ways. Instead of having their sources in springs among the mountains, they may start from

swamps or lakes. They may have low, soft banks near their sources, instead of high rocky ones, and they may have no rapids or falls. Instead of emptying directly into the ocean, they may enter other rivers as tributaries, or they may pour their waters into lakes. But, in spite of such differences, other rivers are much like this one in most respects. If there is a river near you, how does it resemble the one described? How does it differ from it?

FIG. 42. — Mouth of a large river where it pours its water into the ocean.

The meaning of *river system* and *river basin*

We have seen that from its source to its mouth a river may receive water from hundreds of tributaries. Thus the rain that falls in places even hundreds of miles apart may at last be brought together in a single main stream. Such a main stream, with all of its tributaries, is called a *river system* (Fig. 43). For instance, we speak of the Mississippi River System, meaning the Mississippi River and all its tributaries.

FIG. 43. — Map of a river system. Point out the source; the mouth; the main stream; several tributaries.

All the country that is drained by a single main stream is called a *river basin*. Thus all the land drained by the Mississippi River and its tributaries forms the Mississippi Basin. In what river basin is your home located?

What rivers do with their sediment

Very great quantities of soil are carried away by rivers, and much rock is ground up and carried off by them. This load of bits of rock that rivers carry is called *sediment*. Some of it comes from the pebbles that are rolled about in the stream bed, and some comes from the stream bed itself. What becomes of it all?

1. Flood plains

If you have seen a sidewalk, or a field, flooded with water, you perhaps remember that a thin layer of sand or fine mud was left when the flood disappeared. The sand and mud were

borne along by the current, until they reached a place where the water did not move swiftly enough to carry them any farther. Then they slowly settled.

FIG. 44. — A river which has overflowed its banks in time of flood. The tree is completely surrounded by the flood.

After heavy rains, or when the snow melts rapidly, rivers often rise so high that they overflow their banks (Fig. 44). At such times the water spreads out in a thin, slowly moving sheet, on both sides of the main current. Then, as just described, this slowly moving water allows a thin layer of mud to settle. Each flood adds another layer, making the land a little higher, until, after many years, it is built above the usual level of the river. Such land is generally a level plain; and, since it is made by river floods, it is called a *flood plain*.

This is one of the ways in which plains are made. Near small streams such plains are generally narrow strips of land (Fig. 45) between the stream and the hills that rise at some distance on either side. But in large valleys, like the Mississippi, the flood plains are many miles in width.

Flood plains make the best kind of farm land. The soil is very fertile; the surface is so level that it can easily be cultivated; and, being so near the water, it has plenty of moisture for the roots of plants.

2. Deltas

Not all the sediment that a river carries is used to build flood plains along its banks. Much of it is drifted on to the river mouth, where it enters a lake or the ocean. Here the water is usually quiet, so that even the finest mud sinks to the bottom. At first only enough sediment is collected to form low, swampy land. But, like the flood plains, this is slowly built higher and higher, by a layer of mud from each flood, until it becomes high enough to make dry land.

FIG. 45. — A narrow flood plain bordering a small stream, which in time of flood overflows the plain.

Such plains at the mouths of rivers form what are called *deltas* (Fig. 46). Many rivers have deltas so wide that one cannot see across them, and the great quantity of sediment from which

they are made has come from fields, hills, and mountains, perhaps hundreds of miles away. Such delta lands, like flood plains, are very fertile and make excellent farms.

The value of rivers for drainage

Rivers are of importance in other ways besides carving out valleys and building flood plains and deltas. Each river is really a great open ditch for draining the surrounding land.

FIG. 46. — The delta of a river.

Its work in drainage is always of value to the farmers who live in the valley through which it flows; but its importance is most plainly seen when heavy rains fall, or when the snow melts rapidly. If it were not for rivers, this water could not run off so quickly. People in towns and cities along a river bank also owe a special debt to the river, because it quickly carries away all sewage.

Their value for the water they supply

While rivers drain the land, and thus keep it healthful, they also bring the much-needed water to plants, animals, and man.

We have already learned, in our study of the Sahara Desert, how necessary water is to plants. In desert countries men lead water from the streams many miles, through ditches or pipes, and let it spread out over the thirsty soil, so that plants can thrive (Fig. 47). This is called *irrigation*, and in many places, including a large part of our own country, no crops can be raised without it.

Again, many animals and people depend upon rivers for water to drink. Even whole cities often obtain their drinking water from rivers. Find out where your own water supply comes from, if you do not already know.

FIG. 47. — A large ditch, in western United States, in which water is led from a river to be used in watering crops by irrigation.

FIG. 48. — An old-fashioned water wheel used to furnish power for grinding grain into flour in a grist mill.

The water of rivers is also used for turning water wheels (Fig. 48). You have, perhaps, noticed how windmills work. The *wind* turns a large wheel which may be so connected with other wheels that it can pump water, or turn a saw for sawing wood, or grind corn. *Steam* is also used for power; for example, to turn the wheels of a railway engine so that it can drag the heavy cars along.

Their use for manufacturing

River water is made to do work in much the same manner. Where there is a swift current, or where there are waterfalls, such as the Niagara Falls, it is often easy to run some of the water off to one side through a ditch or pipe. The water, racing rapidly along, or falling with great force, strikes a wheel (Fig. 48) and makes it whirl round. This wheel, being connected with others, causes them to turn also, much as one wheel in a clock causes others to move.

Thus machinery is set in motion by which logs are sawed into lumber, grain is ground into flour, cotton is made into cloth, and many other kinds of work are done.

The power obtained by such use of water is called *water power;* and the buildings in which such manufacturing is carried on are called *factories*, or *mills* (Fig. 49).

The water in most rivers does not flow fast enough to strike a wheel with much force. Water power is found mainly in rivers with swift currents, and especially near rapids and falls. In such places mills have been built (Fig. 49), and many cities have sprung up. We found one such city on our journey down the river, described on page 34.

FIG. 49. — A large mill beside a waterfall that supplies the power for running the machinery in the mill.

There is one other way in which rivers are very valuable. It has always been difficult to find an easy means for carrying goods from one place to another. In some places there are no roads, and even where there are roads, they are often hilly, rough, and muddy.

Their use for navigation

Yet most of the things that we use, such as sugar, flour, oil, meat, coal, lumber, and clothing, must be carried long distances, sometimes thousands of miles. Even if the roads were excellent, it would take a great deal of time, and cost much money, to haul these materials in wagons. To ship them by railway takes less time, but is expensive.

A broad, deep river is really one of the finest highways in the world. To be sure, no wagons or cars can be drawn over it, but boats are easily moved upon it. A large river boat can carry as much as scores of wagons or cars (Fig. 50), and many boats can go up and down at the same time, so that a large river is equal to several railroads. Besides, such a river may lead a long distance into a country. For example, one can travel by boat for thousands of miles up the Mississippi River and its tributaries.

For these reasons, carrying goods by boat upon rivers, or *river navigation*, is a very important business. Indeed, it is so important that broad ditches, called *canals*, have been dug in many places (Fig. 51) so that boats may go still farther. Sometimes these canals extend around rapids or waterfalls for the use of river boats. In other places canals have been built many miles across the land, so as to connect one river with another.

Fig. 50. — A large steamboat on the Mississippi River.

Before the time of railways, — which is no longer ago than when your great-grandfathers were boys, — goods were carried by boat more commonly than now. Even to-day, when there are so many good wagon roads and railways, it is cheaper to carry many things on boats than in cars.

It is easy to see, then, why many people have chosen to build their homes near rivers. A farmer prefers to live near a good wagon road, or near the

railway station, so that he may easily send his crops to market; and for the same reason, people have always liked to live near a river, which is a good highway, or *waterway*. It is partly on this account that many of the large cities of the world stand on the banks of large rivers. Do you know of any such cities?

FIG. 51. — A canal boat in a canal dug around rapids in a river.

Definitions

A *river source* is the place where a river starts.

A *spring* is water flowing forth from the ground.

A *river bank* is the land that borders a river. Each river has two banks.

A *river channel* is the part of a valley that a river occupies.

A *river bed* is the bottom of the channel over which the water flows.

A *rapid* is a part of a river where the water flows very swiftly.

A *waterfall* is a part of a river where the slope of the bed is so steep that the water falls nearly straight down.

A *river system* is a main stream with all its tributaries.

A *river basin* is the land drained by a river and its tributaries. The divide surrounding it forms its boundary.

A *tributary* to a river is another stream that flows into it.

The *mouth* of a river is its lower end. It is usually the part where its waters empty into a larger body of water, such as another river, a lake, or the ocean.

A *flood plain* is the plain along the banks of a river that has been built up by the sediment that settles during floods.

A *delta* is the plain formed at the mouth of a river by sediment that the current can carry no farther.

Review Questions

1. How do rivers begin? 2. Describe the upper part of a river. 3. Describe its middle part. 4. What is the condition in its lower course? 5. How may other rivers differ from the one described? 6. What is meant by a river system? By a river basin? 7. Where are flood plains found, and how are they formed? 8. Where and how are the deltas of rivers formed? 9. How are rivers important for drainage? 10. How are they of value for supplying water? 11. For manufacturing? 12. For navigation?

13. What is a river source? A spring? River bank? River channel? River bed? Rapid? Waterfall? River system? River basin? Tributary? River mouth? Flood plain? Delta?

Suggestions

1. Why are the rocks in river beds usually smooth and round? 2. What is meant by "up a river"? By "down a river"? By "right bank"? By "left bank"? 3. Find a spring. Why is its

water cool? 4 Find a flood plain. 5. What are the causes of river floods? 6. Do you know of a city that gets its water from a river or a lake? If so, how is the water brought to the city and distributed to the houses? 7. Make a water wheel, and arrange for a stream of water to turn it. 8. Make a collection of pictures of rivers, and notice as many facts as you can about them. 9. Make a drawing of a river, showing its source, mouth, tributaries, and flood plains.

2. Ponds and Lakes

How ponds and lakes are formed

If you build a dam of sticks and mud across a small brook, the water soon fills the little basin that you make. In this way you can make a small pond (Fig. 52).

FIG. 52. — A boy making a small pond by building a dam in a roadside gutter.

In order to make ponds or small lakes, men often build dams of earth, wood, or stone, across much larger streams (Fig. 53). They do this because the rivers that supply towns and cities with drinking water, or with power for manufacturing, often become too low to furnish the amount of water needed. By means of the dam a large basin is formed; and when the river is high, enough water may be collected in it to last through a dry season. If you have seen such a pond or lake, describe it to the class.

FIG. 53. — A dam built across a stream in order to make a lake for storing water.

Many ponds and lakes have been formed in a similar way. That is, the water has collected behind dams that have been formed across streams. This is true even of the large lakes, some of which are two or three hundred miles long and fifty miles or more wide. Usually, however, these dams have not been built by men.

Some of the dams have been made by beavers (Fig. 54). There used to be a great many beavers in our country, and some are left still. Since they prefer quiet, shallow ponds in which to live, they gnaw down small trees and make dams with the sticks. Then they build their houses in the ponds thus formed.

FIG. 54. — A dam of sticks placed by beavers in a swift stream, in order to make the pond in which they live.

In other places, as among mountains, where the sides of the river valleys are steep, great avalanches of rock and earth have fallen, and blocked, or dammed up, a stream.

These are some of the simplest ways in which dams have been made across valleys, to form ponds and lakes. In your later study of geography you will learn about other ways in which ponds and lakes have been made.

From what has been said, it is clear that a pond or lake is usually nothing more than part of a stream that has been widened by the forming of a dam. The stream flows into this body of water at one end. This end is really a little higher than the other, and is called the *head* of the lake. The water flows out at the lower end, which is called the *foot* of the lake. The stream that flows into a lake is called the *inlet*, and that which flows out is called the *outlet*.

Names for parts of a lake

Some lakes have no outlet, because there is so little water flowing in that the basin cannot fill and overflow. The water in such lakes becomes salt. Perhaps you have heard of the Great Salt Lake, in Utah. Its water is so salt that no one could drink it, even if he were dying of thirst.

Why some lakes become salt

The reason why such lakes become salt is as follows. There is some salt in all water, even in that which we drink, although so little that we do not notice it. When water flows into a lake, the salt is carried with it. If there is no outlet, the water cannot flow out, but it escapes, because every day some of it dries away; that is, it is changed into vapor and carried away in the air. The salt cannot pass off in this manner. It remains, therefore, and slowly collects, until the water of the lake becomes salt.

You have heard of the Sea of Galilee, and of the Dead Sea; both of them are in Palestine.

The Sea of Galilee is a fresh-water lake, with the Jordan River for its outlet. This fresh-water river finally empties into the Dead Sea, a lake that has no outlet. The air in that desert country is so dry that fully as much water passes off from this lake in vapor as enters from the river. On that account the Dead Sea cannot overflow, and it has become one of the saltest lakes on the earth. It is so salt that fishes cannot live in it, and that is the reason it is called the Dead Sea.

tant waterways. Upon the Great Lakes, in the northern part of the United States, hundreds of vessels are engaged in carrying passengers, and also grain, coal, lumber, and countless other products. For these reasons many people have settled on the shores of large lakes, and as a result many towns and cities have been built there. Do you know of any such?

FIG. 55. — The result of a morning's fishing from a canoe in a lake in Canada.

The uses of ponds and lakes

Like rivers, ponds and lakes are of use to men in many ways. They help to keep the ground moist near their shores; they furnish water to cities, to factories, and to farmers for irrigation. Besides this, many valuable food fish are caught in lakes; and in cold countries much ice, for use in summer, is cut from their surfaces.

Again, lakes, like rivers, are important waterways. Upon the Great Lakes, in the northern part of the United States, hundreds of vessels are engaged in carrying passengers, and also grain, coal, lumber, and countless other products. For these reasons many people have settled on the shores of large lakes, and as a result many towns and cities have been built there. Do you know of any such?

Another reason why lakes are important is because their shores are often very beautiful; and the air near them is usually cool in summer. Because of this, many persons go to lakes as they do to mountains, to spend their summer vacations. There they can enjoy hunting, fishing (Fig. 55), canoeing, and bathing, as well as walks along the beaches and in the woods along the shores.

Review Questions

1. How are ponds and lakes formed? 2. Give names for the parts of a lake. 3. Why do some lakes become salt? 4. What are some of the uses of ponds and lakes?

Suggestions

1. Find a pond or small lake and examine the dam that caused it. 2. What dangers do you see from lakes, when the dams made by men have not been well built? 3. Find out more about beavers. 4. What is meant by "up a lake"? By "down a lake"?

you go far enough, you will come to the ocean.

If you wished to go to the home of the nomads of the desert, or of the Negroes of Central Africa, you would have to travel across the ocean; and even if you went on a fast steamer, it would be many days before you arrived there. Most of the time you would be out of sight of land, with nothing but the level

FIG. 56. — The vast ocean, with no land in sight. The sailboats are fishing vessels.

3. The Ocean

The size of the ocean

The great rivers, starting as tiny brooks, grow into larger and still larger streams, until, after days and perhaps weeks, they discharge their waters into the sea or ocean. No doubt much of the rain that falls near your home finally reaches the sea in this way, and if you could float along upon it in a boat, you, too, would in time reach the ocean.

We can see across most lakes, and can sail across even the largest in a day or two; but the ocean is far larger. One can sail upon it, in the same direction, for many days without coming to land (Fig. 56). Indeed, the ocean is so large that it surrounds all the land on which people live, and no matter in what direction you travel, if ocean about you. Every day would be somewhat warmer than the day before, until finally you reached the hot country of Africa.

To reach the land of the Eskimos you would also go by ship on the ocean, and travel for days upon it. On this journey every day would be a little cooler than the day before, and finally you would come to a region where it is so cold that there is ice on the sea even in summer.

If your home is not near the ocean, you might have to make a journey of one or two, or even three or four, days to reach it. It might be necessary to go up hills and across valleys, to pass around lakes, and possibly even to cross great ranges of mountains. You would be surprised to find how much land there is, and how many farms, villages,

towns, and cities there are. Find out how long it would take to reach the ocean from your home.

Although there is so much land, there is far more water. In fact, there is nearly three times as much water as land. The ocean is so immense that the great rivers in all parts of the earth pour their water into it. Their mouths may be thousands of miles apart, yet the sea stretches far enough to reach them all.

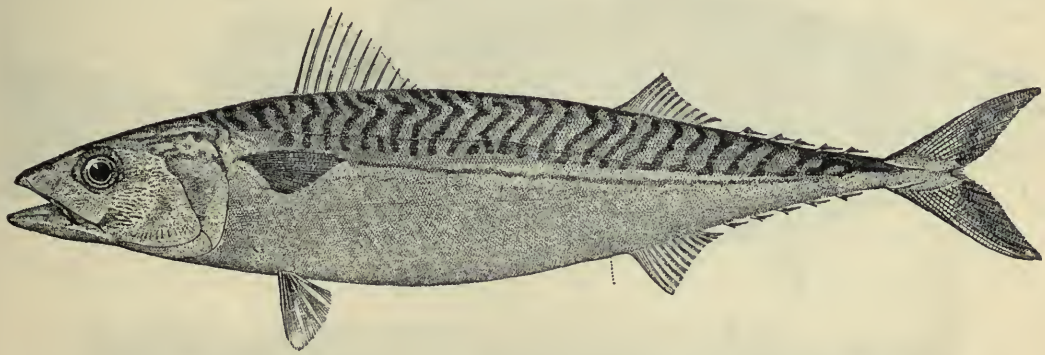

FIG. 57. — A mackerel. They are usually from one to one and a half feet long.

The water of the ocean is too salt to drink, but river water is fresh. Since there are many thousands of rivers entering the sea, you might suppose that their water would make the ocean less salt. It does do so near the mouths of great rivers, but soon the fresh water becomes mixed with and swallowed up in the salt water; for the ocean is so large that all the river water that enters it is not enough to make it fresh.

Plants, animals, and men all owe much to the ocean, for without it very little rain would fall. Moisture is always rising into the air from the ocean, and being carried about by the winds. When it falls from the clouds, we have rain. Even rain that falls thousands of miles inland comes largely from the ocean. Since plants, animals, and men all must have water, the ocean is of value to all living things on the land. It is in supplying water for rain that the ocean is of greatest importance.

Value of the ocean in furnishing water for rains

There are other ways in which the ocean is of value. One of these is in supplying food. You know (p. 5) that almost all the food that the Eskimos eat, such as seal, walrus, and fish, comes from the sea. Fish from the ocean, or saltwater fish, as they are called, are a very important food for others besides the Eskimos; and many men make their living by going out in boats and catching them. Great numbers of fish are sometimes found close to the land; but often they are caught far out in the sea, so that the fishermen must remain out of sight of the land for days at a time (Fig. 56).

Value of the ocean as a source of food

Besides hooks and lines, long nets are often used, and so many fish are sometimes caught in these nets that the boats are filled with them. No doubt some of the mackerel (Fig. 57) or herring that you have eaten have been caught in this way Halibut also come from the sea, and so do codfish (Fig. 58), which may be seen in almost any grocery

store. Picture 56 shows a fishing vessel that is used in catching salt-water fish.

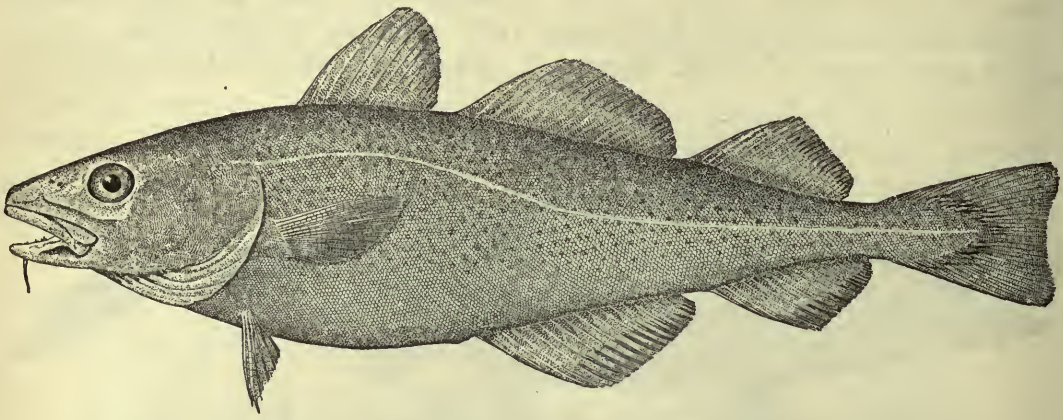

FIG. 58. — A codfish. They are often three or four feet long.

Value of the ocean as a pleasure resort

The ocean water is cooler than the land in summer, and for that reason the breezes that blow from the ocean are cool. This makes the seashore a pleasant place to spend the summer.

The views at the seashore also attract people. The silvery sheet of water, stretching out as far as the eye can reach, is often dotted with white sails. Sometimes its color is green, again it is blue; when the clouds hang over it, it is dark

FIG. 59. — The ocean waves dashing into foam on the rocky coast of New England.

and gloomy. There are beautiful sunrises and sunsets to watch, and one can see the storms come and go, with the waves dashing into the whitest of foam against the rocks (Fig. 59), or rolling high upon a sandy beach.

In fact, the water, the sky, and the coast are always changing in appearance. This is true of the lake shores, too; but the ocean is so much larger than the greatest lake, that the scenery on the seashore is far grander than that on the lake shore.

For these reasons many people go to the seashore in summer, just as others go to the mountains or to the lakes. There they spend their time climbing over the rocks, walking upon the clean sandy beach, bathing in the cool salt water (Fig. 60), and watching the scenery.

FIG. 60. — Hundreds of people bathing on the sandy beach at Atlantic City, New Jersey.

Many houses, and even cities, have been built at the most attractive places along the seashore. There are large hotels for visitors, which are often crowded in summer; but few people are found at these places during the winter.

Resorts of this kind are very common near large cities, and some of them have become well known. Coney Island and AsburyPark are two such resorts near New York City, and Atlantic City is another near Philadelphia. Can you tell anything about any one of them?

Where the winters are warm, as in the South, the seacoast is a *winter* resort. Many persons spend a part of the winter on the warm southern coasts, or on small islands in the sea. Some of these, like Bermuda, lie far out in the ocean. At these winter resorts there is no frost or snow. Flowers blossom all winter, and people dress in light clothing, enjoying themselves out of doors, while at their own homes the ground is covered with snow and the weather is bitterly cold.

Value of the ocean for navigation

Different parts of the ocean have different names. For instance, the *Atlantic* Ocean is the part lying between the United States and *Europe*, the land where the English, Irish, Germans, and other peoples live. We buy many articles from these countries, such as linen and woolen cloth, sugar, silk, oranges, and olives; and they likewise purchase articles from us, such as cotton, wheat, meat, iron and steel goods, and leather.

Hundreds of millions of dollars' worth of these articles are sent across the ocean every year. Thousands of passengers also cross the ocean every year, some coming to this country to live, others going to Europe to travel, or to visit friends. The fastest steamers need only five or six days for the voyage.

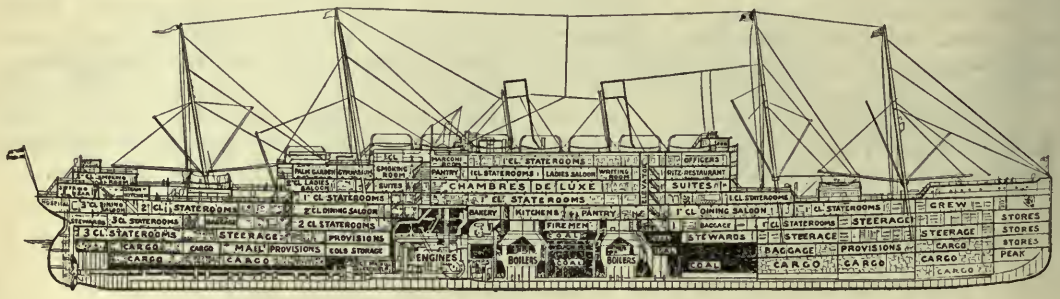

FIG. 61. — A section through one of the large ocean steamers — the *Kaiserin Auguste Victoria* of the Hamburg-American Line. Note the position of the engines, where the coal is stored, the places for the cargo, passengers, etc.

All parts of the ocean are a great highway, and thousands of ships are always traveling upon it in all directions, carrying people, and also fruit, iron, different kinds of machines, mail, and many other things (Fig. 61). Although there are so many ships, the ocean is so large that a person upon one of them may sail for days without even seeing another ship.

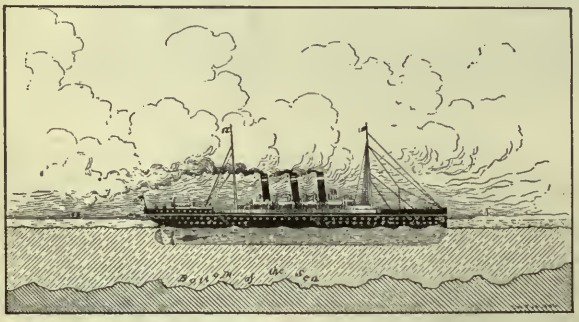

FIG. 62. — A picture to show how deep a large steamer sinks into the water.

Ocean navigation is, therefore, a very important business, and thousands of men are engaged in it. A single large steamship may employ five or six hundred men, and carry as many as three thousand passengers. Many of the ships are great steamers, costing several millions of dollars. Some of these travel at the rate of twenty miles or more an hour; others are sailing vessels pushed along by the wind, going fast when the wind blows hard, and hardly moving at all when it is calm. Many of the ships used on the ocean are far larger than vessels upon lakes, and they sink deeper into the water. The largest, when loaded, reach down thirty feet or more below the surface.

Difficulties and dangers for vessels

One of the difficulties that ships meet is in loading and unloading the goods that they carry. Wagons can be driven alongside a railway car and be quickly filled or emptied. But a large ship sinks down into the water so many feet (Fig. 62) that it is difficult for it to find a place where it can come close to shore. If it should strike the bottom, it might be wrecked. Besides this, a boat cannot load and unload where there are large waves.

FIG. 63. — The great storm waves on the open ocean.

Again, upon both lakes and the ocean, vessels meet with dangers of many kinds. Storms are often severe, and the waves are so high that sometimes they sweep over, and for a moment almost cover up, even the very large vessels (Fig. 63). When far out from land, large, well-built ships are not in serious danger in such weather, but smaller vessels, especially those that are old or poorly built, may be destroyed.

When approaching land, however, sailors of all vessels must be careful. The shores of large lakes and the ocean are often quite irregular, and the depth of the water may change in a very short space. In some places there are dangerous shallows, in others hidden rocks, or *reefs*, that lie near the surface (Fig. 64).

There are also currents that may float a vessel out of its course; and fogs are often so dense that a person can see only a short distance ahead. In a fog it is very easy to lose one's way at sea. In addition to all this, strong winds and high waves may drive a ship in the wrong direction, in spite of all that can be done to prevent it.

How such difficulties and dangers are met

Not all these difficulties and dangers can be overcome, but much is done to make shipping both easy and safe. The irregular shape of the coast itself helps

FIG. 64. — The wreck of an ocean steamer that ran aground in shallow water during a storm.

toward this end. Very often the land partly surrounds a body of water, as in Fig. 68, forming what is called a *bay*. Some of these bays are very large, being even hundreds of miles long, but many more are quite small. Many of the small bays have an opening large enough for vessels to enter easily, but small enough to shut out most of the fierce waves. If the water is deep, as is often the case, such a small bay makes a fine *harbor* (Fig. 65); that is, a place where vessels may be protected from storms and waves.

1. Harbors

Fig. 65.—Rio Janeiro harbor.

For the purpose of loading and unloading ships, piers of wood or stone, called *wharves*, are built from the shores of the harbor out into the deep water. Even large vessels can be firmly fastened, or *moored*, to these wharves, and wagons or cars can be drawn out on them close to the side of the vessels. Thus a convenient and safe way is found for handling goods that are carried on ships.

Harbors are so important that men sometimes make them on coasts where there are no good natural ones. This is very expensive work, but it pays. Walls of rock are built in such a way as nearly to inclose a body of water, much as the water of a bay is inclosed by land. Such a wall is called a *breakwater* (Fig. 66), because it breaks the force of the waves and prevents them from entering the space behind. It often happens that harbors are not as deep as they need to be. The vessels now used are much larger and sink deeper into the water than those formerly used. On that account many harbors that were once deep enough are now too shallow. All the time, too, the waves and tides are bringing sediment that settles in the harbors, slowly filling them up.

Fig. 66.—Breakwaters built at Chicago to form a harbor where ships may be safe from the waves.

Vast sums of money have to be spent, therefore, in deepening harbors. The loose sand and mud are scraped out by dredges; but when the bottom is solid rock, it has to be blasted out. This work is of so great importance to so many people, that the United States govern-

FIG. 67. — A lighthouse built on a small island at the tip of a cape.

ment spends millions of dollars every year in doing it.

2. Lighthouses and lightships

So long as a ship lies in a good harbor, it is safe from most dangers. But when it is outside, on its way from one harbor to another, dangers are ever present. Did you ever stop to think how a vessel finds its way on the great ocean ?

While a ship is out of sight of land, its officers must guide it by the position of the sun or of certain stars, using the compass and other instruments. But during storms and foggy weather, the winds and currents may cause even a large steamship to drift far out of its course. Then as a ship approaches land, the chief help is from the *lighthouses* (Fig. 67), which are built in many places along the coast.

Often the land extends out into the water, forming what is called a *point* or a *cape;* or if large and almost surrounded by water, a *peninsula* (Fig. 68). Lighthouses are placed far out on such points or capes or peninsulas, or on islands near the mainland, so that their lights may be seen a long distance over the water. They are also built in other places, wherever the danger requires.

In some places there are dangerous shallows, or *shoals*, where it is impossible to build a lighthouse. In that case, ships with lights on their masts, called *lightships* (Fig. 69), are securely anchored near by to give warning to sailors.

When the captain sees the light of a lighthouse or lightship, he knows that he is nearing land and must be very careful. How can he tell which light he sees when there are so many light-

FIG. 68. — Find here and describe a harbor; a bay; a point; a cape; a peninsula; an island; an isthmus; a strait.

houses? That is not difficult, for the lights are not all alike. Some are white, others red; some give a steady light, others turn round and, as they turn, send out flash after flash. There are many different kinds of lights, and the maps, or *charts*, that every ship carries, tells the captain where each is placed. He also knows the special kind of lighthouse to be found at the entrance to the harbor for which he is bound.

In case of heavy fog, when the lights cannot be seen, powerful horns and whistles are blown for a warning. The lighthouses and lightships are well provided with these, and they are blown every few seconds, or minutes, according to the need. When sailors approach the coast during foggy weather, they always listen for the sound of the foghorn.

FIG. 69. — A lightship on which men live, keeping the light on the mast burning at night, and the fog whistle blowing in foggy weather.

By such helps as these a vessel finds its way to the entrance of its own port. What a lonesome life those people who live in the lighthouses and lightships must lead, attending to the lamps and giving warning in the fogs!

But how important their work is in saving ships from destruction on the wave-beaten coasts!

3. Buoys

The entrance, or *channel*, to a harbor is often narrow, and sometimes on each side there are reefs and shoals on which a vessel might be wrecked. It is necessary, therefore, that the channel be clearly marked. This is done by placing hollow iron buoys here and there. These float on the surface, but are anchored firmly in their places. They are guide-posts to the sailor, pointing out the way.

Dangerous rocks and shoals are also marked by buoys; and many of these are so made that they send out a shrill whistle, or ring a bell every time they are moved by the waves. On this account they are called *whistling buoys* or *bell buoys*. Have you ever seen any of these on the water?

4. Pilots

It is so important that no mistake be made in entering a harbor that men, called *pilots*, make a business of guiding, or piloting, ships into harbors. They go out in small boats, often out of sight of land, to watch for an approaching vessel. And when they see one, they sail toward it as fast as they can. In stormy weather it is exciting to see a pilot come up in his little boat, tossed about by the huge waves, and clamber up the side of the ship. It seems a wonder that he is not washed into the sea, and that his small boat is not dashed to pieces against the side of the big vessel.

5. Life-saving stations

In spite of all the care that is taken to guide ships safely into harbors, now and then one is wrecked on the coast, especially in foggy and stormy weather (Fig. 64). Then, of course, the lives of sailors and passengers are in danger. Hence it is important that some means be provided for saving shipwrecked people. This is done through life-saving stations. Here and there along the coast such stations are found, where several men keep a sharp lookout for shipwrecks, and when one occurs, go to the rescue. At such times they boldly launch their lifeboats through the surf and perform many acts of bravery.

FIG. 70. — Ships at the wharves in New York harbor.

A harbor is also called a *port*, and a city on an ocean harbor is called a *seaport*. Seaports often grow to be great cities. New York City is an example; it is the largest in North America, and the second in size in the world. Philadelphia is another example; Boston and San Francisco are also seaports. Can you name any others?

Why seaports often become large cities

The fact that each of these great cities is located on a good harbor is one important reason for its size. The ocean connects a good harbor with all parts of the world, and if the country back of the seaport is fertile and thickly settled with people, the port becomes a gateway for travel and for the shipping of goods. To such a port vessels may come by hundreds (Fig. 70), bringing goods that are wanted, taking others away, and carrying passengers back and forth. Hundreds of vessels may be seen in New York harbor at all times, and every year many thousands of them enter that port alone.

About how to study

When studying the lesson, it is important to know that the sentences in the text are not all to be remembered alike, for they are not all of the same value. Neither are the paragraphs all of the same value, nor the pages. On the contrary, in any text there are always some sentences, paragraphs, and pages that are far more important than others, and one of the principal things to do in studying a lesson is to discover what the most important parts are.

For instance, on pages 44 and 45, telling about

the size of the ocean, there are more than a score of sentences, and seven different paragraphs. What are the most valuable parts? They are not the first paragraph, nor the last, for both of these could be omitted and the main thought would remain fairly clear. But look at the second and the sixth paragraphs. These two contain the principal fact. Read them to see what it is. The other paragraphs are less important, aiming merely to help make this main thought plain. They can be remembered most easily, too, by thinking of the most important fact.

In all study of the text, it is best to find the most important statement as quickly as possible, and then think of the others along with it, in order to hold it the more firmly. To test this, pick out the one or two main sentences in the paragraph about the value of the ocean in furnishing water for rains. Do the same with other parts of the text.

Definitions

An *island* is a body of land entirely surrounded by water.

A *peninsula* is a body of land almost surrounded by water; the word means "almost an island."

A *cape* is a small body of land extending out into the water.

A *bay* is a large body of water partly inclosed by land.

A *harbor* is a small body of water so shut in by land, or by breakwaters, that vessels entering it are protected from winds and waves.

Review Questions

1. Give proofs that the ocean is very large. 2. How is the ocean of value in furnishing water for rains? 3. Of what value is it in furnishing food? 4. What is its value as a pleasure resort? 5. How is it valuable for navigation? 6. What difficulties and dangers do vessels meet on the ocean? 7. State the main facts about harbors. 8. About lighthouses and lightships. 9. About buoys. 10. Pilots. 11. Life-saving stations. 12. Why do seaports often become large cities? 13. What is an island? A peninsula? A cape? A bay? A harbor?

Suggestions

1. What might be the effect, if there were much less ocean and much more land? 2. Examine pictures of bluefish, herring, and halibut in the dictionary, and make a drawing of each. Find the real fish at some fish market or elsewhere. 3. In what direction would you go to reach the ocean at the nearest point? Find out how far it is. 4. Have some one tell you about a voyage across the ocean. 5. Have some one tell you about a visit to a summer resort on the seashore. 6. Read the description of the storms on the ocean, found in the story of Robinson Crusoe. 7. Do you know of any views that are made more beautiful by the presence of water? If so, where are they? Describe them. 8. Which is probably the most important use of the ocean? Why? 9. Which is probably its least important use? Why? 10. Make a drawing illustrating island, peninsula, cape, bay, and harbor.

3. The Air

Resting upon the solid earth is the air, or, as it is often called, the *atmosphere*. It surrounds the earth completely, much as a cover surrounds a ball, and it extends upwards many miles above our heads.

Extent of the atmosphere

This air cannot be seen, though we can see birds, and sometimes balloons, floating about in it, much as fish float in water. We know that air is all about us, because we can feel it striking against our faces and hands whenever the wind blows; and when it blows very hard, the air may move with force enough to overturn trees and even houses.

The air is of the greatest importance to all plants, animals, and people. It is even more important than the heat and the soil, about which we have already learned. Plants and animals cannot live without it; and we ourselves cannot live more than a few minutes, if we do not have it to breathe. Drowning means nothing more than sinking under the water, where there is no air to breathe.

The importance of air to life

The air is of great use to us in still another way. Without it there could be no fire; for wood, coal, and gas can-

not burn without air. So without the air we could have no light from oil or gas, no fire for cooking or heating, and no steam for running factories and engines.

FIG. 71.—A sailing vessel driven through the water by the wind blowing against the sails.

The movements of the air, which we call winds, are of great importance, for the winds do work of many kinds. For example, they drive sailing vessels through the water (Fig. 71), and they turn windmills, which are often used to pump water from wells. They also remove smoke, dust, and foul air from crowded cities.

The work of the winds

Far more important than this is the work the winds do in carrying water from place to place over the earth. The air takes up water from the ocean in the form of vapor, which we cannot see, and the winds bear it about, sometimes a few miles, sometimes hundreds and even thousands of miles. The winds carry the vapor in all directions, and often hold it for many days before letting it fall.

It requires an enormous amount of water to keep the soil damp, the lakes full, and the rivers flowing; far, far more is needed than all the wagons, boats, and trains in the whole world could haul. But the winds do that vast work very easily, and much of the time very quietly. Thus it is by the help of the winds that the rocks are made wet and changed to soil, that plants are able to grow, and that animals and people are furnished with water to drink.

What causes the air to move, and do such a mighty work? Heat has much to do with it. If you watch smoke in a room where there is a lighted lamp, you will see that it moves toward the lamp, and then, being heated, rises above it (Fig. 72).

The cause of winds

In the same manner the air in a room moves toward a hot stove, and then, being heated, rises above it. This is why in winter, when there is a hot fire, the air near the ceiling of a room is much warmer than that near the floor and at some distance from the stove.

FIG. 72.—Smoke of a burning match rising above a lighted lamp.

The reason for this upward movement of the air is first, that air is made lighter when it is warmed; and second, that the colder air all

around, being heavier, crowds in and pushes the warm, lighter air upward. The warm air is forced upward just as a light cork that is sunk in water is forced to the surface by the heavier water all about it.

The movements of the atmosphere that surrounds the earth are quite like those of the air of the heated room. If the atmosphere is warmed in one place, cool, heavier air "blows" in and pushes it up. That causes wind, first toward the warmer place, and then upward.

For example, people on the seashore often enjoy a cool sea breeze on hot summer days. This is because the hot sun warms the land more than the water; then the cooler air from over the sea blows in toward this warmer place. It is these cool sea breezes that greatly help to make the seashore a pleasant summer resort.

Such differences in the warmth of the air are the main cause of winds everywhere. Winds that blow even hundreds of miles in one direction are caused in much the same way as the very gentle draughts about a lamp or a stove. What wonderful results follow from the fact that there are always some places warmer than others!

Water is always rising from the ocean's surface, as well as from rivers and lakes. In fact, enough water to fill thousands and thousands of barrels is leaving the ocean every minute and floating away in the atmosphere; and at all times there is enough water in the air to fill many large lakes. What causes so much water to rise into the air? And why can we not see it there?

How the air is able to take up water

You have no doubt watched a kettle of water boil, and have seen that "steam" rises from it. Perhaps you know, too, that if it boils long enough, all the water will boil away, leaving the kettle quite dry. All the water in the kettle has then passed into the air, where it cannot be seen.

The reason for this is that heat has changed the water, which is a *liquid*, into a *gas*, which, like air, has no color and cannot be seen. This gas is called *water vapor*, and it is so light that it floats about in the air. That explains how the air is able to "take up" water and carry it about without our being able to see it.

It is not necessary, however, to boil water in order to change it to vapor. All over the earth, wherever there is water, vapor is rising into the air every minute. You can prove this for yourself by noticing that muddy streets and wet clothes soon become dry, even in winter. Or you can place a shallow pan of water on a table and observe, after some days, how much of it is gone.

People say that the water has *evaporated*, which means simply that it has changed to vapor. It is in this way that so vast an amount of water is always rising from the ocean into the atmosphere. Perhaps after many days, and after traveling hundreds of miles from the ocean, the air gives back some of its water vapor in the form of rain. What causes it to do this?

What causes the air to give back this water

Have you ever noticed a glass, or a pitcher of ice water, "sweat" (Fig. 73) on a hot summer day? The water that collects on the outside of a glass of cold water has not leaked through, for there are no holes in the glass. What has really happened is that the air around

the cold glass has been cooled by it, and this has caused the vapor in the air to collect in drops on the cold surface of the glass. Drops would gather, or *condense*, just the same on any cold glass, even if no water were in it.

The windowpanes of a kitchen are often covered with drops of water from vapor, which rises from the kettles and is condensed into a liquid again on coming close to the cold glass. The vapor in your breath will be condensed in the same way when you breathe against a cold windowpane.

FIG. 73. — Drops of water that have gathered on the outside of a cold glass on a hot summer day.

From these facts you see that when air loaded with vapor is cooled, some of the vapor gas is changed back to liquid water. Heat will cause water to change into vapor, and cold will change it back again.

There are several ways in which winds may be cooled. You know that mountains are colder than the lower lands (p. 25). Therefore, winds that blow against mountains are often chilled so that the vapor is condensed, forming clouds (Fig. 74) and rain. This proves clearly that mountains are an important help in causing rain. Indeed, the mountains are usually the rainiest parts of a country.

Vapor may also be condensed into clouds and rain when a cold wind blows against a warm, damp one. Again, on hot summer days, the warm air near the earth often becomes so light that it rises high above the earth to a place where the air is cold; and then the vapor is condensed into raindrops. The summer thundershowers, which often come on hot afternoons, are caused in this way. Such days are usually sultry, and "muggy" air is really air with much water vapor in it.

There are several different forms that the vapor in the air takes when it changes to water. For example, when you breathe into the air on a cold, frosty morning, your breath forms a little cloud, or *fog*. The cold air has made the vapor in your breath change to tiny drops of

The forms into which vapor is condensed

FIG. 74. — Clouds that have formed on the mountain sides as the damp winds are chilled by the cold mountains.

water, so small that you cannot see a single one, though hundreds of them together make a thin mist. You have, no doubt, seen fogs in valleys, on lakes, or over the ocean. These are always made of tiny drops of water condensed from vapor in the air.

Fig. 75. — A view from a mountain top, looking down on the clouds.

Most *clouds* are also made of tiny fog and mist particles. These particles, too, are caused by the cooling of the air, as when winds blow against mountain slopes. When climbing a mountain one may pass through such a cloud, and it then seems to be no more than a fog or a mist. Viewed from below, however, it is seen to be a cloud; and if you go high enough, you may even climb above it. Then, looking down on its upper surface, you can see clearly that it is a cloud (Fig. 75).

The *raindrop* which falls from the clouds is another form of condensed vapor. Raindrops commence as tiny mist or fog particles, but as they grow in size, they become so heavy that they can no longer float. They must then fall to the earth.

We have learned that water may be either a liquid or a gas. We know, too, that it may also be a solid, for ice is the solid form of water. When vapor condenses at a temperature below 32°, or the *freezing point*, it takes the solid form. Then either *snow* or *hail* is formed, instead of rain. Have you ever examined the beautiful snow *crystals*, or *snowflakes*, as we call them (Fig. 76)?

Drops of water often collect at night on the cold ground, on grass, and on leaves. This we call *dew*. The dew gathers because the ground and plants cool quickly after the sun sets. These in turn chill the air next to them, until some of the vapor in it changes to liquid water. If the temperature is below the freezing point, *frost* is formed instead of dew.

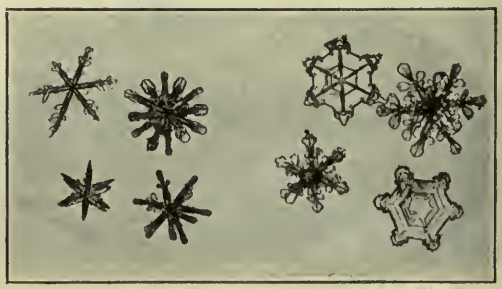

Fig. 76. — Photograph of snow crystals, showing their beautiful, starlike forms.

Our weather depends very much upon our

winds. Winds from certain directions, as from the ocean, are likely to bring rain, while others bring none. You would find it interesting to observe this for yourself. If you should keep a record, every day, of the direction of the wind and the kind of weather it brings, you would soon learn which of your winds cause rain, and which cause fair weather. You might also notice the clouds, and look at the thermometer each day, to see what the temperature is. By this means you can learn something about the weather near your home. A record of this kind, which is called a *weather record*, might be kept somewhat as follows:[1]—

Meaning of weather records, and how to keep one

Date	Time of day	Direction of wind	Kind of weather	Temperature
March 10	8 A.M.	Southeast	Cloudy	55°
March 10	6 P.M.	Calm	Gentle rain	60°
March 11	8 A.M.	Strong west wind	Clear	30°

[1] Some teachers may consider it profitable to introduce at this point an elementary study of the daily weather maps, at least to the extent of reading the predictions, and noticing how nearly correct they are.

Review Questions

1. What is the extent of the atmosphere? How do we know that there is air all about us? 2. Of what importance is air to life? 3. What work do the winds do? 4. State the cause of winds. 5. How is the air able to take up water? 6. What causes the air to give this water back? 7. Into what forms is the vapor in the air condensed? 8. What do you understand by a *weather record*? How would you keep one? 9. Tell what happens to a raindrop from the time it leaves the ocean to the time it returns to it.

Suggestions

1. Name other ways, besides those mentioned in the text, in which air is important. 2. Why does smoke go *up* chimneys? 3. Make a drawing, showing how a hot stove causes a movement, or circulation, of air in a room. 4. How many examples of evaporation can you observe about you? 5. What examples of the condensing of vapor can you find? 6. Why do clouds often surround mountain tops? 7. What winds usually bring your rain? 8. Where have they probably obtained their vapor? How far is that from you? 9. Prove that air is a real substance by thrusting an open bottle upside down into a pail of water.

SECTION III. INDUSTRY, COMMERCE, AND GOVERNMENT

1. Industry and Commerce

In your study about the Eskimos you found that they live in a very simple way. If an Eskimo needs a house, he builds it. If he wants food, he catches a fish or kills a seal. If he needs clothing, he takes a sealskin and makes it. If he wishes to have a sledge, or a boat, he makes that. Thus, he depends entirely upon himself for his food, clothing, and shelter.

How the Eskimo supplies his wants

The Eskimo does not think of going to a store to buy anything, for such a thing as a store is unknown to him. He has no money, because he has no use for it; there is nothing he can buy with it. He has never seen a horse and wagon, nor a railroad train, nor a city; nor does he know anything about post offices or the telephone or the telegraph.

Not many hundred years ago there were no stores in this country where we live. Then, like the Eskimo, every man had to depend largely or wholly upon himself for his food, clothing, and shelter.

How our early settlers supplied their wants

Our first white settlers came from

Europe, and they made their homes along the eastern coast, because that was the first land they came to after crossing the Atlantic Ocean. Soon people, called *pioneers*, began to push into the wild country farther west. Often several families settled together, many miles away from other people; but sometimes a family went off alone and made a home, ten or fifteen miles from the nearest neighbor.

1. Location of homes

Fig. 77. — The log house of a pioneer.

Most of the United States was first settled by such families as these.

Usually the first thing they had to do was to cut down trees in order to make room for a house and garden. The house was built of logs, and mud was used to stop up the cracks (Fig. 77). The house often had no floor except the earth, and only a single room. The beds were made of posts driven into the ground and joined together with crosspieces. The chairs were three-legged stools, and the table was part of a log supported upon four legs.

2. House and furniture

Wheat was raised for bread; and corn, which often took the place of wheat, was made into corn bread. Tea was often made from roots found in the forest, and most of the meat was obtained by shooting wild game.

3. Food

Many families kept sheep, and the wool was made into yarn, blankets, and cloth. If a boy needed a new suit of clothes, his mother might weave the cloth, cut it out, and sew the parts together. Such a suit was called *homespun*. Or, if there were no sheep, the clothing might be made out of the skins of animals. Many boys wore trousers made from deerskin, and used moccasins for shoes, when they did not go barefoot.

4. Clothing

There were no schools, and whatever the children learned from books was generally taught by the mother. There was little time for reading during the day, and the only light at night was that which came from the burning wood in the great fireplace. Ink was made from some colored root, such as brier root, and pens were cut from quills. There were few books, however, and there was little time for reading or writing.

5. Schools and study

As a rule, each man raised more of some things, such as wool, wheat, or hogs, than his own family needed. There were other articles that he had to buy, such as powder, sugar, salt, pepper, and coffee.

6. Necessary journeys

Sometimes a pioneer stayed at home and bought nothing, or he waited till some trader

came along and then exchanged skins for the things that he wanted. More likely, however, he made a journey, once or twice a year, to the nearest town, which was perhaps a hundred miles distant. He then took with him the products of the farm and exchanged them for such articles as he needed.

These trips had to be few, not only on account of the distance, but because the roads were rough and muddy. It might take two weeks to haul a load of grain to town and bring back the things he wanted. The journey sometimes was dangerous also, for in those days savage Indians often lurked in the forest.

7. Independence of such life

The lives that such pioneers lived were, in many ways, as independent as that of the Swiss Family Robinson, or of Robinson Crusoe. Of course, when a man started out into the wilderness, he took some articles with him, such as a gun, with powder and bullets, some clothing, and some blankets. But when he reached his new home, he found himself with no one but his own family to look to for help. Then, like Crusoe, he was forced to rely upon himself. In spite of the trips to the cities, most of the things that a family used had to be obtained by the family itself, and each member had many kinds of work to do. In some parts of the world, where there are few settlers, people still live in this manner.

From Inman's "The Old Santa Fe Trail," by courtesy of the publishers, Crane & Company.

FIG. 78. — A pioneer and his pony.

Our country was settled so rapidly that each family soon had neighbors. A number of people would build their houses near together, so as to form a little village, and one of them would start a general store. Then the families living some distance away would come to this center to trade, bringing their farm products and the skins of animals, and taking back other articles.

8. Dependence on others, later

As the number of people in such a place grew larger, each man did fewer kinds of work. Perhaps one of them built a sawmill, and sawed lumber for the others when they needed it. Another spent part of his time at carpentry work for his neighbors. A third built a gristmill, and ground grain into flour. A fourth made shoes a part of the time, or served as a doctor, or taught school, along with other work.

A few of the men might spend all

their time at one kind of work. For example, the blacksmith might be kept busy shoeing horses, and repairing wagons, while the storekeeper did nothing but buy and sell goods. Now and then the storekeeper would make trips to the nearest city, to buy such supplies as he thought his neighbors would require, like matches, boots, shovels, axes, calico, and drugs. These he would keep in his store for sale. Sometimes he received money for them, but more often he took eggs, meat, wool, and grain for his pay. These he would send to the nearest large city for sale.

Hence it was no longer necessary for each farmer himself to go to a distant town or city, for he could usually get what he wanted from the store. He could also sell his products to the storekeeper, and with the money received pay the blacksmith, or doctor, or teacher. Thus each man came to do fewer things for himself, and to depend more and more upon others for many things.

Each year more people came to this country, and the villages grew to be towns and cities with many mills and factories. Then people began to live as we now do. That is, not a few men only, but *every* man began to do only one, or at most, very few kinds of work.

How our wants are supplied

At present some men do nothing but farm; others, nothing but dig coal or iron ore from the mines. Some spend all their time at fishing; others spend it in making cloth, or needles, or shoes. The work that one man does may be of a very simple kind. For example, he may only drive a team, or make screws, or saw shingles, or tie up sacks of flour, or put in the heads of barrels.

With the money received for such work he buys the many things he wants, and these articles have been made by hundreds, perhaps thousands, of other people. Think how many men have had a share in the work of preparing the food that you have on your table each day, or the shoes that you wear, or the house in which you live! How different our ways are from those of the pioneers!

As a rule, each town or city is especially interested in one, or, at most, a few kinds of business. For example, a town near the forest is likely to have an important lumber industry. Another, in the midst of mountains, may have mining for its special work. A third, near great wheat fields, may have immense flour mills.

Special kinds of work for each town or city

The articles that these cities produce are sent away in all directions; and other things, that the people need, are brought to them from the hundreds of places in which they are produced. In what kinds of work is your town chiefly interested? What are some of the articles that are brought to it?

When each man does only one kind of work, and depends upon others for most of the things that he needs, good roadways, or *highways*, become of very great importance. This is especially true when goods have to be carried long distances, as in a large country like ours. If we live in the East, and the best wheat is raised more than a thousand miles away, in Dakota, it is of little use to us unless it can be brought to us. If the best shoes are made in New England, they are of little value to the people of the South, unless they can be easily

Highways
1. Their importance

FIG. 79. — A pack train carrying supplies up a mountain trail in western United States.

shipped there. It is of the highest importance, therefore, that we have good highways leading in all directions.

2. Trails

When a country has not advanced very far, the highways are usually poor. For example, the routes of travel in some of the regions of Africa are merely paths that have been made by goats and barefooted people, and are less than a foot wide.

The Indians in this country, likewise, had only narrow paths, or *trails*. They often used the trails made by the bison. Wagons could not be drawn over these, and goods could be carried only on the backs of men, or of horses. A number of horses carrying packs formed a *pack train* and these trains may still be seen in some places (Fig. 79).

3. Roads of pioneers

The pioneers at first had only trails, and one of their hardest tasks was to cut roads through the dense forests. Trees had to be cut down, stumps and stones removed, steep places leveled, and swampy places filled in. Streams had to be crossed by wading across, or *fording* (Fig. 80) them in places where the water was shallow. This was often difficult, and even dangerous, especially when the streams were swollen after heavy rains; and bridges were built as soon as the people were able.

4. Our roads

Many of our country roads are still very poor. They are rough or steep in places, and at some seasons of the year the mud is so deep that it is difficult for a team of horses to draw even an empty wagon.

FIG. 80. — Horses and wagon fording a swift mountain stream.

Our roads are being rapidly improved, however, and some of the states are spending large sums of money each year in making them smooth, hard, and level. Perhaps you have seen some of this work and can tell how it is done.

In cities there is so much hauling of heavy loads that the streets must be paved. For this purpose bricks are often used, or paving stones, which are larger than bricks; and sometimes asphalt, or blocks of wood are used. But the most common pavement, especially in the country, is called *macadam*, after the Scotchman

who invented it. It consists of broken stones, scattered to a depth of from six to ten inches, and pressed together as closely as possible. What kinds of pavement, if any, are to be found in your neighborhood?

5. Rivers, lakes, and canals

You have already learned that lakes and rivers are important for travel and for the transportation of goods. When the pioneers were settling the Mississippi Valley, it was the custom to carry many of their goods down the Ohio and Mississippi rivers, a thousand miles or more, to New Orleans for sale. In many parts of our country the rivers were at that time the best routes of travel. These *waterways* are still generally the cheapest, and every year the government spends great sums of money in keeping them clear of logs, stones, and mud, so that they may be in good condition for boats.

Where there are waterfalls or rapids in rivers, canals have sometimes been built so that boats may pass around them. Canals have also been made to connect lakes and rivers with one another. Much money has thus been spent in improving the natural waterways of the United States.

6. Railroads

In our country railroad trains have largely taken the place of wagons, and also of river boats, as carriers for long distances. This is because trains are so much faster than wagons or boats. Even on the finest of roads, wagons can seldom be drawn more than forty miles a day. Boats can travel somewhat faster; but trains can go from five hundred to one thousand miles per day. Moreover, they carry both passengers and freight far more cheaply than these could be taken in wagons.

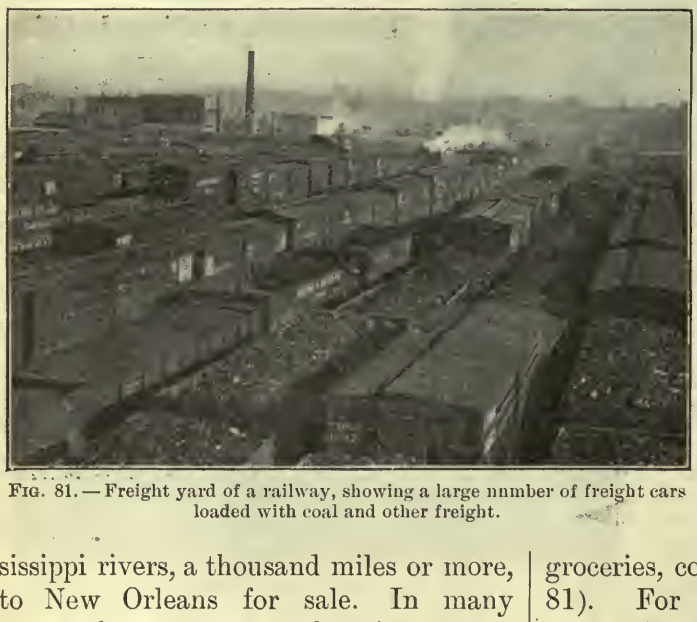

FIG. 81. — Freight yard of a railway, showing a large number of freight cars loaded with coal and other freight.

As we ourselves travel on passenger trains, we are apt to think that the chief business of railways is to carry people; but that is not usually the case. Their main business is to carry freight, such as grain, cattle, groceries, coal, oil, and machinery (Fig. 81). For this reason on most railways there are many more freight trains than passenger trains; and there are many more cars in each freight train.

The fast passenger trains also carry express packages, newspapers, and letters. Before railways were built, the mail was carried in stage coaches, or on horseback. Now many passenger trains have one or two cars that are used for this purpose alone; and most of our mail is carried in this way.

7. The ocean

The ocean is the greatest highway of all, connecting us with the most distant countries, as well as joining different parts of our own land (Fig. 82). Before the invention of the steam engine, the ocean was so difficult to cross that it kept the people of different countries apart. Sailing vessels were then the only ships in use, and they are very slow. The invention of the steam engine made steamships, as well as locomotives, possible. Now thousands of steamships carry passengers, freight, and mail rapidly by water, just as trains do by land.

Thus people have improved upon the trail, the stagecoach, and the sailing vessel, until all parts of the civilized world are brought into close touch with one another.

Fig. 82. — Vessels coming and going in New York harbor.

The great occupations

The people of the United States are busy producing many things, and sending them from place to place. Although each man does only one kind, or, at most, very few kinds of work, there are scores of different kinds all together. Most of these, however, are included under seven great occupations. They are (1) *agriculture*, including farming, gardening, and the grazing of cattle, sheep, and horses; (2) *fishing;* (3) *lumbering;* (4) *mining;* (5) *manufacturing;* (6) *trade*, or buying and selling; and (7) *transportation*, or the carrying of goods.

1. The first five of these

The greatest of these industries is *agriculture*, about which you have already studied in the first and second sections of this book. One man out of every three in the United States is engaged in agriculture of some kind.

Fishing is far less important. Still, along the shores of the lakes and the ocean, there are thousands of men who spend all their time at this work.

Lumbering is not carried on in as many places as it used to be, because many of the forests have been cut down. Yet, every house you see is built partly of wood on the inside, and many are made of wood on the outside as well. Besides this, wood is used for many other purposes, as for making furniture and paper. From this you can understand that great numbers of men must be engaged in cutting down trees and sawing them into lumber.

Mining is a great industry, employing hundreds of thousands of men. There are many kinds of mines, the most important of which are coal, iron, copper, gold, silver, and lead mines. *Quarrying*, or taking out stone from the earth, may be considered a part of mining.

Manufacturing is a still more important industry than mining. Note how many things about you have been carefully made somewhere. This book that you are reading is one example. The desk, at which you sit in school, much of your food, and your clothes are other examples.

These *five* occupations serve mainly to supply *food*, *clothing*, and *shelter*. They are often called the *five great industries*, and you will again and again find them mentioned in your later study of geography. These *five*, however, merely *produce* articles. The first four produce the raw materials, or *raw products;* the fifth changes, or *manufactures*, these raw products into articles ready for use.

2. The other two great occupations

There are thousands of people engaged in shipping the raw products and manufactured articles, as we have just seen in our study of highways. If there were not, these articles would be of little use. Nor would they be of much use if there were not other thousands of people buying and selling them in stores, so that we can get them when we wish.

There are, therefore, the two other occupations of (1) *trade*, or buying and selling; and (2) *transportation*. These two together are called *commerce*.

The commerce within our country is called *home*, or *domestic commerce*. The commerce between the United States and other countries is called *foreign commerce*. In your study of geography, you will find that domestic and foreign commerce are very important.

No doubt you can think of some occupations, such as teaching, that do not belong either under commerce, or under any one of the five great industries. However, the seven great occupations cover the kinds of work that most men do; and they are the chief kinds that need to be studied in geography.

About how to study

It takes much practice to discover the most important thought of a page quickly. Yet, one can get his lessons more easily by learning to do that.

Here is an example. The first page of this chapter tells how the Eskimo supplies his wants. The main thought here is found at the end of the first paragraph, in the words, "*He depends entirely upon himself for his food, clothing, and shelter.*" The rest of the two paragraphs merely makes this central thought clear by giving examples, as follows: he builds his own house, finds his own food, makes his own clothing; there are no stores where he can buy anything; he has no money to buy things with, for he has no use for money; he has never seen a city; nor even a horse and wagon, nor a train; and he knows nothing about telephoning, or telegraphing, or writing for what he wants.

Here are many facts, and it is difficult to remember them until one finds the leading thought that binds all the others together. Then it becomes easy to remember most of them. Since lessons are more easily mastered by getting the leading fact quickly, stop often, after reading a paragraph, to see whether you can state its principal thought. Do this in a few words; if possible, in a single sentence. Then add as many other statements as you remember which explain the chief thought. Practice getting your lessons in this way.

Review Questions

1. How does the Eskimo supply his wants? 2. Tell about the location of the homes of the early settlers. 3. About their houses and furniture. 4. Their food. 5. Their clothing. 6. Their schools and study. 7. Why were journeys necessary? 8. How was their life an independent one? 9. State how people later became more dependent. 10. How are our own wants supplied? 11. What about special kinds of work for each town or city? 12. Explain the importance of highways. 13. Tell about trails. 14. The roads of the pioneers. 15. Our roads. 16. Show the importance of rivers, lakes, and canals as highways. 17. Of railroads. 18. Of the ocean. 19. Name the great occupations.

20. Describe the first *five*. 21. Describe the other two.

Suggestions

1. What articles would you expect to find in a general store in a village? 2. How are department stores in large cities like such general stores? 3. The last syllable in the names of many towns and cities is *ford*, as Hartford, Stamford, Rockford. What does that fact suggest to you? 4. Find out more about the ways in which money is spent on rivers to make them more useful for navigation. 5. Write a story describing an early pioneer's journey to the nearest large town. 6. What men do you know who are engaged in some one of the seven great occupations? 7. Make a list of articles that you use which were brought from a distance, on the railroad or by water. Which of these belong to domestic commerce? Which to foreign commerce? 8. Is there any one of the seven great occupations that we could somewhat easily do without? If so, name it, and give your reasons. 9. How can good roads and waterways help to prevent famine?

2. Country and City

Kinds of work in country and in city

The kinds of work that people do cause some to live in the country, others in the city. The farmer, for instance, lives in the country because he must have a great deal of land in order to raise his crops. The lumberman must live where there are forests.

Persons engaged in the five other leading occupations usually live in towns and cities. Miners, for example, must have their homes near the entrance to the mines where they work; and the workers in a single mine, together with their families, often make a large town. Men who work at manufacturing must live near the factory. A single factory may employ several thousand men; and since there are often many large factories near one another, many thousands of people may thus be brought together. These people, together with those engaged in commerce and other kinds of work, form great cities, sometimes containing hundreds of thousands of persons. Cities are usually located at some point where the shipping of goods is easy, as on a river, a large lake, an ocean harbor, or a railway center.

Life in the great cities is so different from that in the country, that it will be interesting to see what some of the differences are. Since life in the country is very simple, and since more than half of all the people in the United States live there, we will study country life first.

The country

1. The space needed by a farmer

A farmer needs land enough for a house, a barn, and other buildings; for a garden and an orchard; and for fields in which various kinds of crops can be raised. This means that he must have a large tract of land.

Figure 83 shows a plan of a farm in the state of Ohio. It includes 160

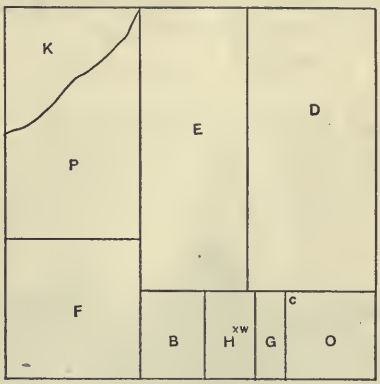

Fig. 83. — Plan of a farm in Ohio.

acres, which is the amount of land in many farms in that section. One side of this farm is half a mile long; and

FIG. 84. — A farmer's house and barn.

from this you can easily tell the entire distance around it. The house and yard, shown by the letter *H*, are close to the road that runs along one side of the farm. The barnyard and barn, lettered *B*, are on the left. *G* is the garden, and *O* is the orchard. The rest of the land is divided into fields, *D* containing corn, *E* oats, *F* grass, and *P* pasture. At *K* there is a small wood lot, from which firewood is obtained. Can you tell about how long and wide some of these fields are?

The house is of two stories and a half, and is built of wood (Fig. 84). Close to it is a woodshed in which piles of wood are kept for burning. On many farms, where wood is scarce, coal is used instead.

The barn is only a short distance from the house, and is larger than the house. In it are kept the horses, cows, and other farm animals, and the wagons, plows, and other farm implements. Much hay and grain is stored there, to be sold later, or to be fed to the animals in winter, when they cannot graze in the pasture.

FIG. 85. — A farmer's children playing in the hayfield.

In one corner of the orchard (at *c*) is a henhouse in which from one hundred to two hundred hens are usually kept; and near the henhouse is a pen for a few pigs. Besides these animals, there are some turkeys, ducks, and geese.

Vegetables and strawberries are

raised in the garden, and there are also small patches of raspberry, blackberry, currant, and gooseberry bushes. Besides apple trees in the orchard, there are pear, plum, and peach trees. All together make a good many kinds of fruit that are raised on the farm.

The yard about the house is large, and the grass is kept closely cut. There are several elm and maple trees in the yard, as well as some flowering bushes and flower beds, which the farmer's wife cares for with much pride.

Most of the other farms near this one are of about the same size, though some are larger and others smaller. What can you say, therefore, as to how far apart houses in the country usually are?

2. The farmer's water, light, and heat

Near the house is a well (*W*), from which the farmer obtains his water. On this farm the water is pumped by a windmill into a tank, from which some is piped to the house, and some to the barnyard for the animals; but on many farms the water is pumped by hand.

At night, light is supplied by lamps that burn oil. This house is heated by stoves placed in several of the rooms, though some farmhouses are heated by furnaces.

3. Schools in the country

Although there are not many children on each farm, it is important that they go to school. All the children who live near enough together to attend one school may not number more than twenty-five or thirty, and even then some may have to walk several miles. On fine days such a walk is pleasant enough, but since there are no sidewalks, it is not so pleasant in rainy weather, and the walk is very difficult when there is much snow. Because of the distance, children living far away from the school usually take their lunches along, and remain at school all day.

Since there are so few pupils, the building is generally small, with only one room (Fig. 86). There is but one teacher, and children of all ages, from six to nine-

FIG. 86. — A group of school children in front of a country schoolhouse.

teen or twenty years, study and recite in the same room, and to the same teacher.

You might think that such a school could not be very good, yet some of our best-known men and women have attended such a country school. Perhaps you can name one of our Presidents, or some other great man, who once went to a country school.

The city

1. The space used by a family in a large city

In a great city, as many as twenty thousand persons are sometimes found living within a space no larger than the single farm just described. The buildings, therefore, must cover

almost all the ground, leaving little or no room for yards and lawns.

In some of the larger cities the buildings have from four to fifteen or twenty stories, and sometimes even more than that. In such a building a single family occupies only a small part of one floor, called a *flat* or *apartment*, which has from two or three to eight or ten rooms. Other families live in other flats on the same floor, and in the stories above and below. Thus several hundred persons may have their homes in a single large building.

The factories, stores, office buildings, and other places where the city people work, are also very large. Hundreds, and even thousands, of persons may work in a single one of them. Some of the office buildings in New York City are over thirty stories high (Fig. 87).

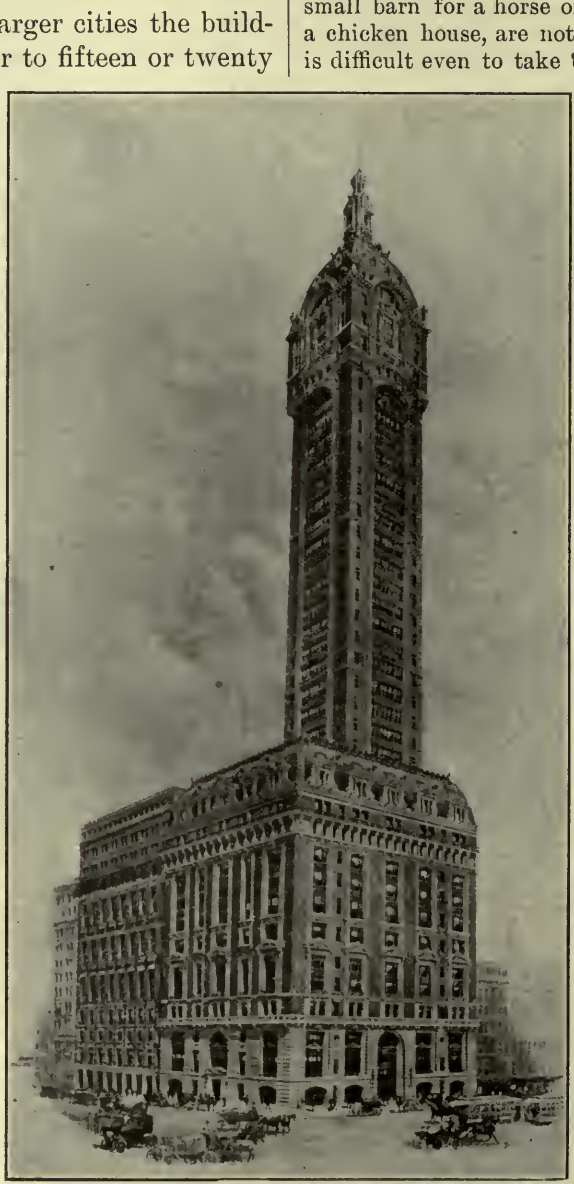

FIG. 87. — The Singer Building in New York, one of the highest buildings in the world. It is 612 feet high, has 41 stories, and there are offices even in the lofty tower.

There are, it is true, houses of two and three stories in the large cities, just as in the country. However, since the land on which such a house stands is often worth several times as much as a large farm, not many families can afford to have such houses. With land so costly, a small barn for a horse or cow, or a garden and a chicken house, are not to be thought of. It is difficult even to take care of a pet dog, or a cat, in a crowded city. Usually there can be no yard, and the street is the only place where the children may play (Fig. 88).

2. Water, light, and heat in the city

It would be impossible to have wells enough to furnish water for all the people in a city. Besides that, the water might not be fit to drink. Instead of coming from a great number of wells, therefore, the water is brought to the city in large pipes, from some distant source such as a lake or a river. It is then led in smaller pipes through each street and into each house. When one wants water, all that he needs to do is to turn a faucet, and the water flows freely; and there is enough to supply all, although thousands may want it at the same time.

Lamps for light cause much trouble even in the country. In the city, where there are so many people in one building, and where the buildings are so close to one another, lamps may be dangerous. Why? Gas and electricity usually take their place.

For heat, furnaces are commonly used. They burn coal, and heat the houses by means of either steam, or hot water, or hot air. In the larger buildings, furnaces big enough to heat a great number of rooms at once are placed in the basement, and, by means of pipes, steam is carried to each room.

3. Food in the city

The farmer himself raises much of the food that his family needs, such as vegetables, fruit, meat, and often the grain for flour. Other things that he uses he buys at the village store. In a great city, on the other hand, little or no food is produced, so that the problem of feeding the hundreds of thousands of people who live there is a very serious one.

Trains, ships, and wagons, loaded with all sorts of food, are all the time moving toward a large city. For example, milk is brought every day in special milk trains that start perhaps one or two hundred miles away. At each station they take on cans filled with milk from surrounding farms, and in this way many cars are filled by the time the city is reached.

Most of the city people buy food at the stores in very small quantities, because they have no room in which to keep large amounts. For instance, they may buy three or four pounds of sugar at a time, or a small bag of flour, or two quarts of potatoes. The farmer, on the other hand, has whole barrels of potatoes, apples, and turnips stored in his cellar, and often buys sugar and flour by the barrel.

From all this you can see how the city depends upon the country for food.

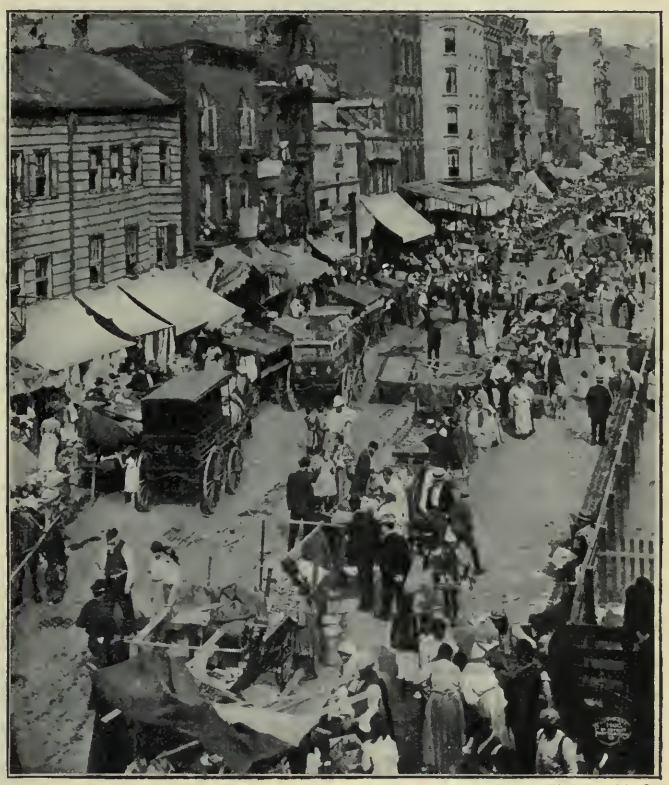

FIG. 88. — A crowded street in the East Side of New York City.

If anything should prevent food from reaching a city for a few weeks, the people would starve. Even when a heavy snowstorm blocks the freight trains for a day or two, there is suffering in the larger cities.

The people are so crowded in a great city that there are often children enough in one block to fill a large school. Sometimes a thousand, and even two or three thousand

4. Schools in the city

children, go to school in one building. The schoolhouse may have from twenty-five to seventy-five large rooms in it, with a teacher for every room. Scores of such schools may be found in a single city (Fig. 89).

FIG. 89. — A large city school in New York.

The children usually need to walk only a few minutes to reach their school, and at noon they go home for luncheon. Land is so valuable that these children, unlike those in the country, very often have no school playground. They must play in the street, dodging horses, wagons, and street cars as best they can.

Transportation in country and in city

People in the country walk short distances to visit one another, or to work. They have horses, which they can use for hauling goods or for driving. The roads are never crowded (Fig. 90), and where they are well made, it is a pleasure to drive over them.

Transportation in a large city is a very different matter. In spite of the fact that each building holds so many people, many persons live too far from their places of work to walk there. Street cars, therefore, carry many of them.

In the largest cities the distances are often too great even for riding on street cars, for they go slowly and cannot carry half of the people, even though they run only a minute apart. This is especially true in the mornings, when tens of thousands of persons start for their places of work at about the same time, and in the evenings, when they return home.

In great cities, therefore, like New York, Chicago, and Boston, railroads are built above the streets. These are called *elevated railroads* (Fig. 91). They carry great numbers of passengers, the trains running every few minutes; yet

FIG. 90. — Driving on a country road.

the elevated trains, like the street cars, are often greatly overcrowded.

To meet the needs of transportation further, in New York, Boston, and some other cities, electric railroads, called *subways*, have been built in tunnels dug underground (Fig. 92). They even run under rivers, and they carry thousands of passengers every day.

Thus it happens that in some parts of New York there may be an electric car in the street, a train directly overhead, and another train directly underground, all filled with people, and rushing along as fast as they can in the same direction.

FIG. 91. — An elevated railway in New York City.

In the near future, many more tunnels for carrying passengers and freight will have to be built in the great cities. This will be necessary, because even now some of the streets are so crowded with street cars, wagons, carriages, and automobiles, that these can scarcely move at all (Fig. 93); and foot passengers find it difficult and even dangerous to cross the streets.

Attractions of country and of city

1. The country

A person who likes the trees and the green grass, who loves to watch the birds, and who finds pleasure in gathering wild flowers, growing fruits and vegetables, should live in the country. So should any one who likes to skate and coast, to hunt and fish, to keep cats, dogs, and other pets, and to take long walks in the quiet woods and fields. There is plenty of room there for all such pleasures. In the great cities, on the other hand, there are children who have never seen a bird, except perhaps the English sparrow, nor a cow, nor a pasture, nor a field of grain.

It is true that life in the country seems lonesome to many. But it is much less lonesome now than it used to be, since the postman now carries mail to the farmer's door every day, and the farmer is able to have the telephone in his house, just as people have in the city. Then, too, the country roads are being improved every year, so that it is now easier and more pleasant to drive over them, and to visit neighbors. In many parts of the country, also, there are electric car lines, running through the farming region on their way from one town to another.

FIG. 92. — An underground railway, or subway, in New York.

Although families in the country live far apart, they are usually much better acquainted than those who live close together in the city. It is common, in a large city, for families that have lived for years in the same building, with only a brick wall a foot thick between them, not to know one another by name, nor to speak when they meet. A farmer might be much better acquainted with a neighbor living ten miles away. Many people in the city, as well as some in the country, lead lonesome lives.

FIG. 93. — A street in New York City, crowded with carts and wagons.

Large cities also have many attractions. Beautiful parks are set aside here and there, where children are allowed to play, and where people can enjoy the birds, flowers, and trees, and watch the squirrels frisking about. There are gardens, where wild animals from all parts of the world are kept, and thousands of children visit these gardens each week, often taking their lunches so as to remain all day. There are great natural history museums, containing stuffed animals of many kinds; and art museums, filled with statues and pictures. There are concerts, fine churches, and large stores. A single store sometimes employs a thousand clerks, and contains almost everything that a person can want.

2. The city

On the whole, there are many more kinds of pleasure in the city than in the country; but the country offers greater attractions to those who like to live out of doors, and who want quiet.

These facts explain why many city people flock to the country in summer. It is a treat for them to get away from the noise, the bad air, and the crowding of the city. It is also clear why country people like to visit the city; for there are always many new and interesting sights for them there. Which do you prefer for a home, and why?

Many people live in towns and villages (Fig. 94). Here the houses are usually from one to three stories in height, placed far enough apart to allow good light all around. A man can have a lawn and a garden if he wishes them, and also a barn where he can keep horses and cows.

Life in towns and villages

If the town is large enough to require street cars, these are seldom crowded, and the streets are wide enough to meet all needs. Such foods as milk, eggs, and potatoes are easily obtained from the surrounding farms, and the open country can be reached, from any point in the town, by a few minutes' walk (Fig. 94).

FIG. 94. — A village nestled in a valley among the hills of New England.

Unless a town is quite small, it supplies itself with water and light in the same way as these are supplied in cities; but in most respects towns and villages resemble the country more than they do the large city.

Review Questions

1. Which great occupations must be carried on in the country? 2. Which ones in towns and cities? 3. Explain why farmers need a large amount of land. 4. How do they get their water, light, and heat? 5. Tell about schools in the country. 6. What about the space used by a family in a large city? 7. How are the water, light, and heat obtained in such a city? 8. What about food in the city? 9. What do you know about the schools there? 10. How is transportation provided in country and in city? 11. What are some of the attractions of the country? 12. Of the city? 13. Tell about life in towns and villages.

Suggestions

1. Boys and girls living in the country usually have much work to do helping their fathers and mothers. Make a list of things that they have to do. 2. Is it an advantage or a disadvantage for city children that they have little work of this kind to do? 3. Make a drawing of some farm that you know, showing the buildings upon it, and how it is divided up. 4. Make a collection of pictures of buildings and streets in the city. 5. Write a composition telling whether you prefer to live in the city or country, and give your reasons. 6. If your home is in a city or large town, find out about the lighting system; the transportation; the parks; the museums; the protection against fires.

3. GOVERNMENT

Meaning of voting and of elections

Every boy and girl has heard men talk about *voting*, and has noticed how interested they often become as *election* day draws near. Do you know what is meant by voting and by election?

Suppose that all the members of your class, or of your school, wished to form a club, and to choose one of your number president. How would you go about it?

Probably the names of two or three children, who seemed best fitted for the place, would first be suggested. Then each of you would write the name of the one you preferred upon a slip of paper, and drop it into a box. After that, all the slips, or *votes*, would be counted, and the boy or girl who received the greatest number of votes would be elected.

In such a case you would be voting, and having an election at school. When you dropped the name of the one you preferred into the box, you would cast a *vote;* and the *election* would be nothing more than the choosing of some one for the position. Quite possibly some of you would become just as much interested in such an election as men do in their elections.

Men hold their elections in much the same way. Ask your father, or some man old enough to vote, to tell you exactly what he does when he votes.

People hold elections and vote on all sorts of questions; but usually when one speaks of voting and of elections he means the choosing of officers for our government.

Matters that elections decide

We do not hold elections to decide how a farmer shall manage his farm, for it is best that he should do that about as he pleases. He builds fences, puts in certain crops, sells his grain, or feeds it to his stock, as seems to him best. So, also, the miller builds a large or a small mill, uses old or new machinery, grinds much or little corn, and makes repairs as he chooses. In each of these cases one man owns and uses the property.

There are many things, however, that no one person owns, and in which a large number of people are about equally interested. That is true, for instance, of roads. Many people drive or walk over them, but no one person owns them. The people together have to decide, or vote, where and how they shall be built and repaired, and who shall do the work. That is, they hold elections to make laws about the roads, and choose officers to carry out such laws.

The schools, likewise, are not owned by any one person, but are of great interest to everybody. So questions about the schools are also voted upon at elections.

What shall be done with thieves and disorderly persons? This is another question of great interest to everybody. Laws must be made to control such people, and officers must be selected to carry out such laws. There are many other questions that interest large numbers of people. Can you not name some of them? Ask your father, or some friend, to tell you some of the questions that will be voted on at the next election.

Elections, therefore, deal with matters of general interest. They provide for laws on such matters, and for the selection of officers to enforce them.

Some of the matters that are voted on at elections concern only those persons who live in a small section, as in a small town or village. For instance, the kind of streets that you shall have, and the men who shall take care of them, are questions of no especial interest to people in other towns or cities, but they interest all the voters in your section.

Questions to be voted upon by small groups of people

It is also very important that you have a good school building, with a large yard, and good teachers. People living at a distance have little interest in *your* school, but those who live near you are very much interested in it. The people to vote on such a question, therefore, would be those who have a special interest in it.

Thus there are many matters that are mainly of interest to the persons living in one neighborhood. They are called *local questions*, and are voted upon only by the few voters in that section. Ask some one to tell you of other local questions.

There are some matters that are of interest to the people in a much larger section. For example, a railway company might charge too much for passengers and freight. In such cases, laws may need to be passed, forcing them to charge lower rates. Since a railway may be hundreds of miles long, the people of a single town or city could do very little with such a company. In that case it would be necessary for men, living perhaps hundreds of miles apart, to unite in some way to make laws.

Matters that concern the people of a whole state

Again, it is important that there be buildings in which blind people may be cared for; others in which the deaf and dumb may be educated; and still others in which insane people may be kept. There must also be strong prisons where criminals may be sent. There are not many such persons in any one small section, and it would prove very expensive and difficult to take proper care of only a few of each kind. Therefore, all the people in a large section, called a *state*, unite to make proper laws, and provide buildings and officers for the care of such people. What is the name of your state?

The voters of a state cannot, of course, all come together at one place to discuss such matters. Even if all could make the journey at a time agreed upon, there would be so many thousands that it would not be possible for all to hear those who spoke, and little business could be done. Besides, new laws are needed every year, and the voters would have to spend too much time on such work.

How laws are made and officers chosen for a state

For these reasons it is the custom for one man to be elected to *represent* many others in the making of laws. Where there are great numbers of people, he may represent many thousands, and vote in place of them all. Suppose, for instance, that there are a million persons living in one state, and that one man is elected to represent every ten thousand. There will then be one hundred such men chosen, and it will be their duty to come together and make laws for the whole million.

Such men, being elected to represent others, are called *representatives;* and because they legislate (which means "make laws"), the whole body is called the *legislature.* Find out who is the representative to the state legislature from your district; also who is your state senator.

The city where the legislature meets is called the *capital* (which means "head city") of the state. The capital is often located near the center of the state, and it usually has a fine, large building, called the *state capitol.* It is here that the representatives hold their meetings.

FIG. 95. — The beautiful capitol building at Washington.

The chief officer of the state, who is elected to see that the state laws are carried out, or enforced, is called the *governor*. Who is your governor? He is elected by voters in *all* parts of the state, while each representative is elected by a small section of the state. There are also other state officers, such as a state treasurer, a state superintendent of schools, and judges. Some of these officers are elected by the people; others are appointed by the governor.

How laws are made and officers selected for cities

In large cities, laws are made through representatives, just as in states, and for the same reasons. The representatives chosen to make the laws in cities are usually called *aldermen* or *councilors;* and the highest officer, elected to carry out, or *execute*, the laws, is called the *mayor*. All these officers are chosen by the voters at elections. If your home is in a city, learn the name of your mayor and that of your alderman or councilor. Find out what some of their duties are.

The building in which these representatives meet, and in which the mayor has his office, is called the *city hall*. While the city is governed in some matters by its own laws and officers, the same as any small town, it also forms part of the state and elects representatives to the state legislature.

Questions that concern the people of the United States

In our country there are forty-six states, and there are some questions that no one state can decide alone, because the others are equally interested in them. For instance, it would be a great hindrance to trade and travel if each state made its own money, for different states might then have different coins. In that case, every time a traveler passed from one state to another, he might be obliged to take the time and trouble to exchange his money for a new kind.

Again, in case of war, the country would be weak if each state acted alone.

Perhaps you can give some of the reasons why. Mail is another matter that

FIG. 96. — President Taft.

concerns all the states, and there are others besides. Can you mention some?

So it is clear that we need a *United States Government* as well as state, city, and town governments. The reason for calling it the United States Government is also plain, for the *states* have really *united*, in order to have one central government for many important matters.

How laws are made and officers chosen for the United States

If the people in a single state cannot meet in a body to make laws, certainly the people of the entire United States cannot do so. Therefore, representatives are elected, and sent to one place, from all the states of the Union. Here they consider questions of interest to the whole nation.

The place where they meet is WASHINGTON, and this city is, on that account, the *capital of the United States*, or the *national capital*. At Washington there is a magnificent capitol building (Fig. 95) in which the meetings are held; and there are many other fine government buildings there.

The representatives from the forty-six states of the Union form what is known as *Congress*. This corresponds to the legislatures of the state, for the congressmen make laws for the nation, as the legislators do for the state. The members of Congress are called *senators* and *representatives*.

The chief *executive officer* of the United States, corresponding to the mayor of a city, and the governor of a state, is called the *President* (Fig. 96). He lives in Washington, and his residence is called the Executive Mansion, or White House, since it is white in color (Fig. 97). Who

FIG. 97. — The White House, where the President lives.

is now President of the United States? Who was the first President? What do you know about each?

Besides these officers, who are elected by the people, there are a great many others who are appointed by the President to carry on the government work. Many live in Washington, but some, such as postmasters, live in other places.

FIG. 98.—General George Washington, first President of the United States.

We have seen that our representatives, and other officers, are elected by votes that are cast for them. Because the people thus have the power to make their own laws, our government is called a *democracy*. The first part of this word means "people," and the last part "government," so that the whole word means "government by the people." Because the people do not really make the laws themselves, but elect representatives to do that for them, ours is often called a representative government, or a *republic*.

Why our government is called a *democracy* and a *republic*

It is often said that our form of government makes us "free and equal." People are by no means so free and equal in all countries. Under some governments, in Europe and in Asia, the people have very little to say about the laws that govern them. Nor do the laws protect them all equally; for some of the high officers do quite freely what they wish, while others dare not do this. Many are compelled to obey their rulers blindly, just as little children are expected to obey their parents.

Other forms of government

Such a government is not a democracy, or a republic; it is a *despotism*, or an absolute *monarchy*. This means that the ruler is a *despot*, or a monarch, having complete power to do what he chooses. For instance, he may even put men to death without any trial, a power that the laws of our country do not allow.

In some countries that have kings, however, the people have much power. For example, there is a king in England, but the English people are quite as free as we are.

FIG. 99.—The Washington Monument, erected in Washington in memory of our first President.

In studying a lesson it is not best to spend all of your time with your book in hand. After carefully reading the text through two or three times, you might select some topic that you think would prove interesting to your mother, or to some of your friends, or that they could tell you more about. Then, during the meal hour, or at some other time when others present

About how to study

have nothing special to talk about, bring up this topic. Tell what you have read, and ask the others some questions about it.

Talking over a part of a lesson in such a way is one of the very best ways of studying it, and it is also one of the best ways of pleasing your parents.

Review Questions

1. What do you understand by *voting*, and by *elections*? 2. What kind of questions do elections decide? 3. Give examples of local questions, or questions that are voted upon by small groups of people. 4. Give examples of questions that concern the people of a whole state. 5. How are laws made for a whole state, and who are some of the officers elected for the state? 6. How are laws made for large cities, and who are some of the officers elected for cities? 7. Give examples of questions that concern the people of the United States. 8. How are laws made, and who are some of the officers chosen for the United States? 9. Why is our government called a democracy? Why a republic? 10. Tell about other forms of government.

Suggestions

1. Name some officers that you know about, and find out whether they represent the local, state, or national government. 2. What officers look after your school, and how are they chosen? 3. What is the capital of your state, and where is it? 4. In what respect are the town hall, city hall, state capitol building, and United States capitol alike in their use? 5. Why should the capital of a state be near the center of the state, if possible? 6. What does U. S. stand for?

SECTION IV. MAPS

It is often important to represent a country upon a map, so as to tell at a glance what its shape is, and where its mountains, rivers, and cities are. Such a drawing can be made of any place, no matter how large or small it may be.

How a map of a schoolroom can be drawn

Suppose, for instance, we desire to make a map, or drawing, of a schoolroom (Fig. 100). The room we have chosen is thirty-two feet long and thirty-two feet wide. It would not be easy to find a piece of paper as large as that; but it is not necessary to have so large a piece in order to make the drawing. A small piece will do just as well, if we let one inch on the paper stand for several feet in the room.

In this case let one inch stand for sixteen feet. Since the room is thirty-two feet on each side, the drawing will be just two inches long and two inches wide. To place the desks and aisles properly, we shall need to use a ruler with the inches divided into sixteenths; for one foot in the room represents one sixteenth of an inch on the ruler.

The ends of the room are on the north and south, and the sides on the east and west.

Fig. 100. — Photograph of a schoolroom.

The teacher's desk is three and one half feet in front of the north wall. There is a row of desks about four feet from the west wall. The desks are just two feet long, with eight in a row one and one fourth feet apart. There are seven rows, and the aisles between them are each one and one fourth feet wide. The piano is on the west side of the teacher's desk.

Here is a map of the schoolroom (Fig. 101). Measure each part to see whether it has been drawn correctly, using a foot rule that shows the sixteenths of inches. How large is the teacher's desk? The piano?

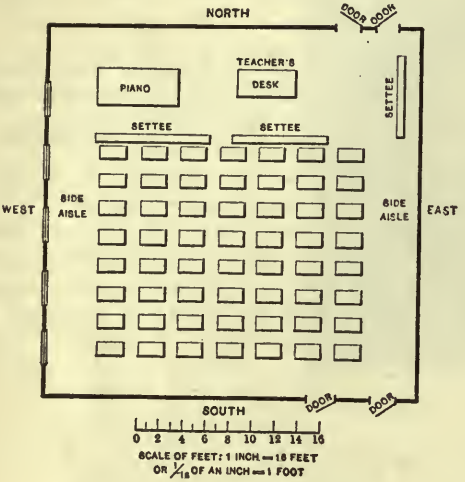

FIG. 101. — Map of a schoolroom.

When a person draws in this way, letting a certain distance on the paper stand for a greater distance, he is said to use a *scale*, or to make a map *according to a scale*. In the schoolroom just described (Fig. 101) the scale is one inch to sixteen feet.

Meaning of drawing "according to a scale"

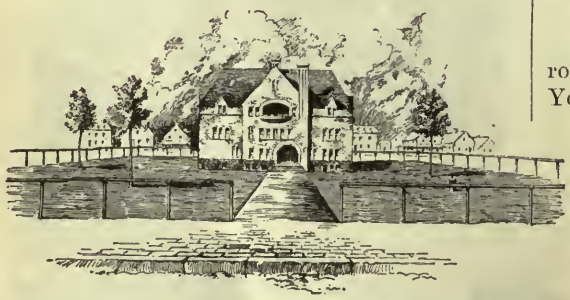

FIG. 102. — Picture of the schoolhouse and yard represented in the map (Fig. 103).

In the next drawing, that of the school yard (Fig. 102), the number of feet which an inch represents must be still greater, because the yard is much larger than the room. Here one inch represents one hundred and forty feet. According to that scale, find out how large the yard and the school building are (Fig. 103).

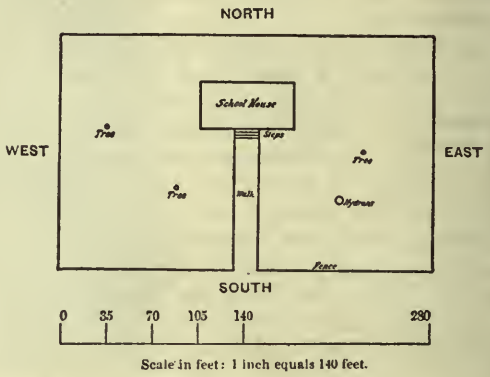

FIG. 103. — Map of a school yard.

Find how far the trees are from each other; from the nearest fence; from the building.

All maps are drawn according to a scale, just as these two are. It makes no difference whether they represent a school yard, a state, the United States, or even the entire earth; all are drawn to a scale. In Part II of this book there is a map of North America (Fig. 134); to what scale is it drawn? Look at some other maps to find out their scales.

Maps that you might draw

Can you not make a map of your own schoolroom? What scale will you use? You might put in your own desk, but omit the others. You might also draw a map of your school yard. If you prefer to do so, find its size by stepping, or *pacing*, the distance, making each of your steps about two feet long. Measure the building in the same way. After having finished these two maps, you might draw a third one, including in it not only the school yard, but also a few of the streets and houses near by. The scale for this third map might perhaps be one inch for every five hundred steps.

Maps are much used to show the locations of places and the direction of one place from another. To use them properly, a person must first understand what is meant by north, south, east, and west. Probably you already know that. One of the easiest ways to find direction is by a compass (Fig. 104).

Ways of finding directions out of doors

A compass is a piece of steel, called a needle, which easily swings around, and always points to the north. This needle is a magnet, like the horseshoe magnets that you have seen. It points northward because some force within the earth draws it in that direction. No one knows certainly just what this force is, but it is called *magnetism*.

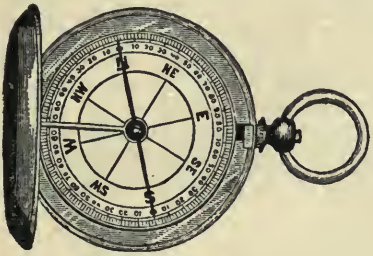

FIG. 104. — A small compass.

Another way to tell direction is by the stars. When the stars are shining, one can tell which direction is north by the help of the Great Dipper. The two stars on the outer side of the Dipper point toward the North Star. This star can easily be found, and it is always north of us.

One can also find direction by the help of the sun. At noon it stands exactly south of us; and twice each year, about the 21st of March and the 21st of September, it rises exactly in the east, and sets exactly in the west. Where does it rise in winter? In summer? When you face the east, which direction is on your right? Which on your left? Answer the same questions when facing the west; the south.

Northeast (N.E.) means halfway between north and east; southeast (S.E.) halfway between south and east. What do northwest and southwest mean?

Point north, east, west, south, southwest, northeast, northwest. Walk a few feet in each of these directions. What is the direction from your desk to the teacher's desk? To the desk of one of your schoolmates? To the door? What direction is your home from the schoolhouse? From certain other houses? In what directions do some of the streets extend?

Now let us tell directions on the map. Lay your drawing of the schoolroom upon your desk so that the line representing the north side of the room is on the north side. Also place yourself so that you face directly north as you look at the map. North on the map now is also north in the room, and the other directions correspond with those in the room. In which direction, on the map, is the door from your desk? From the teacher's desk? Place your map of the school yard in the same position, and give the directions.

Directions on a map

You see that the north side of this map is the side farthest from you. The east side is on your right, the south side is nearest to you, and the west side is on your left. When a map is lying before us, the directions on it are usually the same as these.

Of course it is not always convenient to have a map lying flat. This is especially true in the schoolroom, where the large maps must be hung up, so that the whole class may see them.

Let us hang up one of these maps, taking particular pains to place it upon the *north wall*. Which direction on the map is north now? You see, of course, that the north side must be the upper side, east is on the *right*, south is the lower side, and west is on the *left*.

You should drill yourself on these facts. Give directions from one place to another while the map is hanging up. Put up the map of the school yard, and

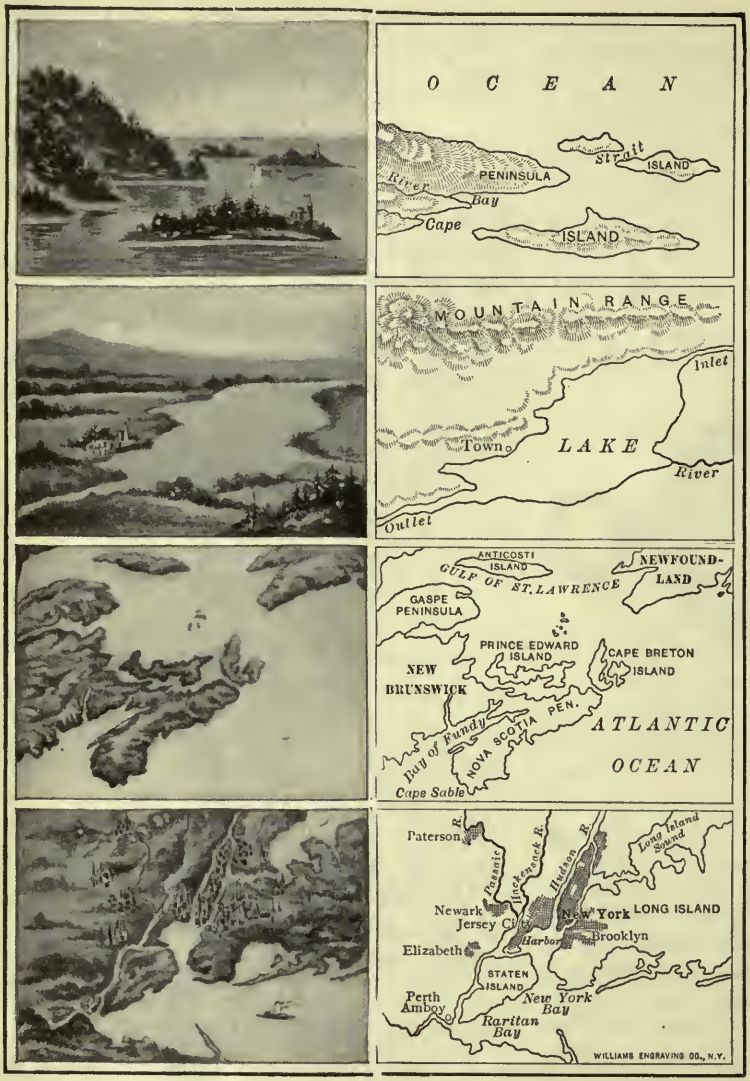

FIG. 105. — To illustrate the meaning of a map. The left-hand figures show the country as if you were looking down upon it; the right-hand figures represent the same country by maps. Tell what you see in each of these.

any others that you may have, and tell the directions from place to place.[1]

It is clear now what a map is. It is a drawing that tells certain things about a country, just as a letter may be some writing telling what a place is like. When you read such a letter, you think of the place and have some idea of how it looks. So, when you look at a map, you should think about the country, how it looks, and how far apart the places are.

Two kinds of maps

There is more than one kind of map. Figure 134 (in Part II), for example, is a map of North America. This shows the shape of the continent, the positions of the mountains, the large rivers, and the principal cities. It does not show the height of the mountains, nor of the hills and valleys, but represents the whole continent as entirely flat. Such a map may be called a *flat map*.

Figure 111, however, is a different kind of map. It shows how the continent might appear if you looked down upon it from some point far above. On this map the plains appear level, as they should, while the

[1] After the children are quite at home in using the map when it is hung on the north wall, hang it on the other sides of the room and have them give the directions. This is very easy work if properly graded; but careless work at this point, in regard to directions on the map, often so confuses children that they never fully recover from their confusion. At the proper time, but much later than this, show that toward the top of the map is not always north. See Figure 566.

mountains stand out in relief. You can easily see where the mountains, plains, and valleys are. Such a map as this is called a *relief map*, because it gives you some idea of the height of different portions of the land, or of the *relief*.[1] In Figure 105 you can easily see the difference between these two kinds of maps. There are other kinds of maps, which you will learn about later.

[1] Some teachers will find it useful to introduce the study of contour maps of the home region at this point. Such a study is not difficult, and will serve many useful purposes. A limited amount of modeling in sand may also be introdnced; but the most important thing to do at this stage is to have the children understand the *meaning* of maps, so that these may be properly used in the class work. The best results from geography study cannot be gained without a knowledge and constant use of maps; and much use of the globe should be made, the moment children begin the study of continents and countries.

Review Questions

1. How can a map of a schoolroom be drawn? 2. What is meant by drawing "according to a scale"? 3. Tell how you have drawn some map of our own. 4. What are some of the ways of finding directions out of doors? 5. What are the directions on a map? 6. What two kinds of maps do you know?

Suggestions

1. Examine a compass. 2. Find the Great Dipper and the North Star. 3. Show how you can tell the north direction by your shadow at 12 o'clock, noon. The east direction. The west. 4. Using sand, make a relief map of some piece of land that has some slopes.

PART II. WORLD GEOGRAPHY

SECTION I. GENERAL FACTS ABOUT THE EARTH

1. Form and Size of the Earth

Hundreds of years ago, before America was discovered, men thought that the earth was flat. It certainly *seemed* flat to them, just as it does to us. A few learned men, however, believed that the earth was a round ball, and that if a person traveled straight on in one direction, he would, in time, return to the place from which he started. You can see how this would be if you move your finger straight around on the outside of an orange, until it comes back to the starting point.

The form of the earth

At that time men used to go to a land called India, for spices, silks, and jewels. To reach India from Spain they traveled thousands of miles *eastward*. Christopher Columbus (Fig. 108) was one of the men who believed that the earth was round. So he thought he could reach India just as well by going *westward* across the ocean. He also thought that the distance would be much less. He therefore went to the king of Spain and asked him for ships and men to make the journey.

The king refused the request of Columbus because the plan seemed foolish, but Queen Isabella came to his aid. At last, on Aug. 3, 1492, he sailed westward from Spain out into the open Atlantic Ocean (Fig. 109). Almost every one thought that he was going on a voyage from which he would never return; but after a journey of several weeks, and many adventures, he discovered land on October 12 (Fig. 110).

Fig. 108.—Christopher Columbus.

FIG. 106.

The Eastern and Western Hemispheres.

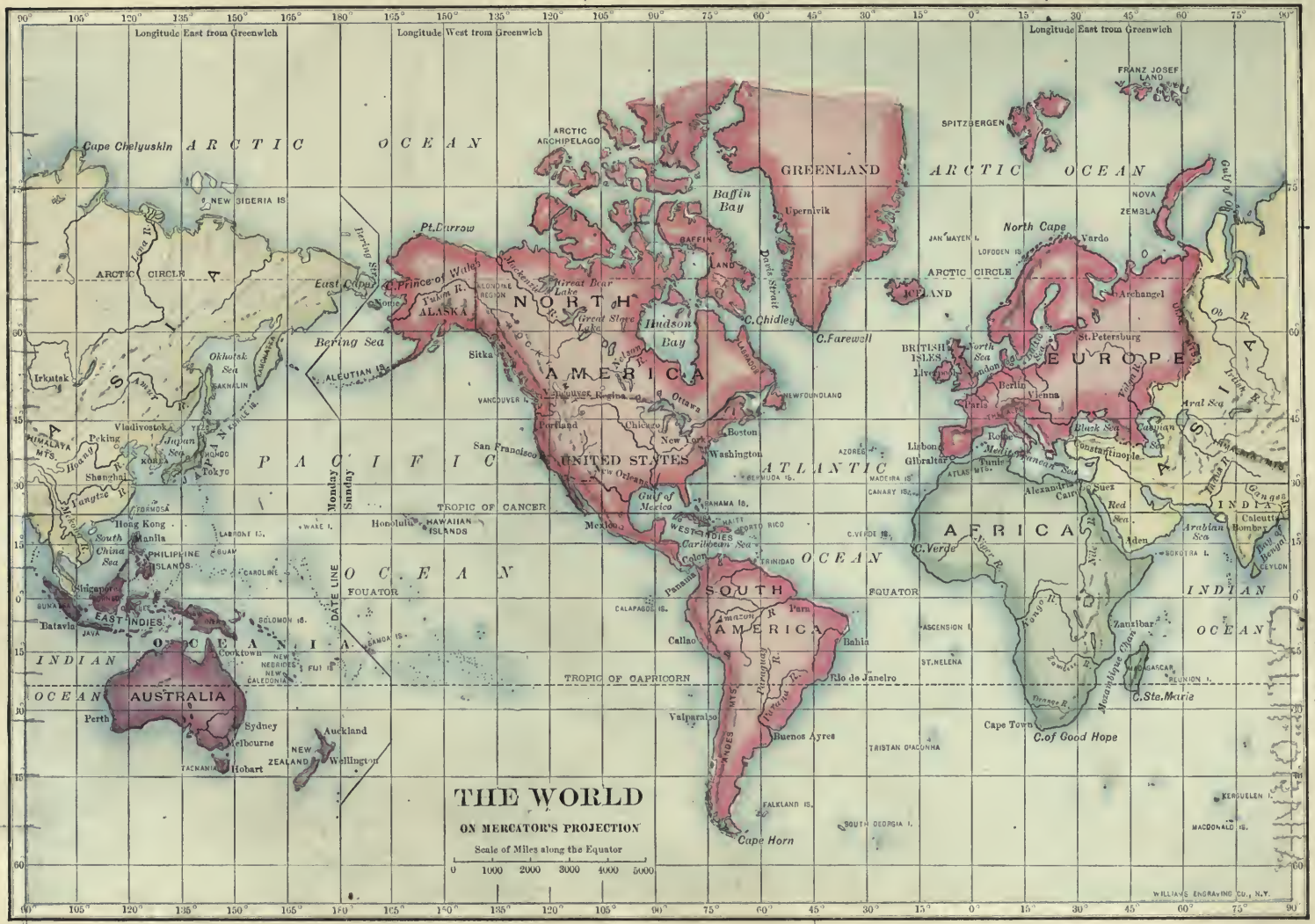
Longitude East from Greenwich
Longitude West from Greenwich
Longitude East from Greenwich
ARCTIC OCEAN
PACIFIC OCEAN
ATLANTIC OCEAN
INDIAN OCEAN
OCEANIA
NORTH AMERICA
SOUTH AMERICA
EUROPE
ASIA
AFRICA
AUSTRALIA
GREENLAND
ICELAND
FRANZ JOSEF LAND
SPITZBERGEN
NOVA ZEMBLA
ARCTIC CIRCLE
TROPIC OF CANCER
TROPIC OF CAPRICORN
EQUATOR
DATE LINE
Cape Chelyuskin
NEW SIBERIA IS
Lena R.
Bering Strait
East Cape
Pt.Barrow
Bering Sea
ALEUTIAN IS
Okhotsk Sea
SAKHALIN
KAMCHATKA
Irkutsk
Amur R.
Vladivostok
Peking
Japan Sea
KOREA
Hoang R.
Shanghai
Yangtze R.
FORMOSA
Hong Kong
South China Sea
PHILIPPINE ISLANDS
GUAM
Mekong R.
Singapore
BORNEO
Batavia
JAVA
EAST INDIES
CAROLINE IS
SOLOMON IS
Cooktown
NEW HEBRIDES
NEW CALEDONIA
FIJI IS
SAMOA IS
Perth
Sydney
Melbourne
TASMANIA
Hobart
Auckland
NEW ZEALAND
Wellington
Monday
Sunday
Honolulu
HAWAIIAN ISLANDS
WAKE I.
LABRONE IS.
Mackenzie R.
Pt.Barrow
Yukon R.
ALASKA
Great Bear Lake
MACKENZIE REGION
Great Slave Lake
Athabasca R.
Peace R.
Nelson R.
Saskatchewan R.
Sitka
Vancouver I.
Columbia R.
Portland
San Francisco
Chicago
New York
Boston
Washington
UNITED STATES
New Orleans
Gulf of Mexico
Mexico
BAHAMA IS.
WEST INDIES
HAITI
PORTO RICO
Caribbean Sea
Colon
Panama
TRINIDAD
CALAPAGOS IS.
Callao
Amazon R.
Para
Bahia
Valparaiso
Andes Mts.
Paraguay R.
Parana R.
Buenos Ayres
Rio de Janeiro
ASCENSION I.
ST.HELENA
TRISTAN D'ACUNHA
FALKLAND IS.
SOUTH GEORGIA I.
Cape Horn
Baffin Bay
Upernivik
BAFFIN LAND
Davis Strait
C.Chidley
C.Farewell
Hudson Bay
NEWFOUNDLAND
Ottawa
Quebec
Montreal
Labrador
Ungava
Hudson Strait
ARCTIC ARCHIPELAGO
Jan Mayen I.
North Cape
Vardo
LOFODEN IS
Archangel
Oh R.
St.Petersburg
BRITISH ISLES
North Sea
London
Liverpool
Paris
Berlin
Vienna
Rhine R.
Danube R.
Black Sea
Caspian Sea
Aral Sea
Constantinople
Rome
Lisbon
Gibraltar
Tunis
Mediterranean Sea
ATLAS MTS.
AZORES
MADEIRA IS.
CANARY IS.
BERMUDA IS.
C.VERDE IS.
C.Verde
Alexandria
Cairo
Suez
Nile R.
Red Sea
Aden
SOKOTRA I.
Arabian Sea
Persian Gulf
Euphrates R.
Tigris R.
Ganges R.
Calcutta
Bombay
CEYLON
Zanzibar
Zambesi R.
Congo R.
Niger R.
Senegal R.
Mozambique Chan.
MADAGASCAR
REUNION I.
C.Ste.Marie
Orange R.
Cape Town
C.of Good Hope
KERGUELEN I.
MACDONALD IS.
THE WORLD
ON MERCATOR'S PROJECTION
Scale of Miles along the Equator
0 1000 2000 3000 4000 5000
WILLIAMS ENGRAVING CO., N.Y.

FIG. 107.

Thinking he had reached India, Columbus called the natives Indians; but, instead of India, he had discovered some islands in the West Indies, on the coast of our own continent of North America. He did not know that a continent and a large ocean still lay between him and India.

FIG. 109.—A copy of the *Santa Maria*, one of the ships that Columbus had on his first voyage to America.

After Columbus had returned to Europe in safety, other men dared to explore the *New World*, as it was called, to distinguish it from the *Old World*, where all white men then lived. One of these explorers, named Magellan, started to sail entirely around the earth. He was killed when he reached the Philippine Islands, but his men went on with the ships and completed the voyage. This was in the year 1520, and it was the first time that any one ever sailed entirely around the earth. Since then many people have made the journey, in various directions, and the earth has been studied so carefully that every one now knows that it is round.

FIG. 110.—Columbus taking possession of the newly discovered land in America.

The great round earth is a huge ball, or *sphere*, called the *globe*. The reason why it does not appear round to you is that you see so little of it at a time. If you see very little of an orange, for example, it will not look round. To prove this, place a piece of paper with a small hole in it, upon an orange, so that none of the surface of the orange is seen, excepting that which shows through the hole. You will then observe that this part of the orange appears to be flat, not round.

Why the earth does not seem round

If we could get far enough away from the earth to see a large part of it at once, we could easily observe that it is

round (Fig. 111). We know that the moon is round, because we look at it

FIG. 111. — A map of half the earth as it might appear if seen from a great distance above it.

from a great distance; and the earth has the same shape as the moon.

The size of the earth

Our globe is very large; it is much larger than the moon. A lofty mountain seems to us very high, but even the highest mountain peaks are only a very small part of the great earth; when compared to the whole earth, they are no larger than a speck of dust compared to an apple. The loftiest mountains are rarely more than three or four miles high, but the *diameter* of the earth (Fig. 112), or the distance from one side to the other, through the center, is nearly *eight thousand miles.*

FIG. 112. — Figure of the earth cut in two, to show the *diameter* — a line passing through the center of the earth.

The distance around the earth, on the outside, called the *circumference,* is about twenty-five thousand miles. This distance, as you may see, is a little more than three times the diameter. The circumference of any sphere is always a little more than three times its diameter. How can you prove this with an orange?

2. Daily Motion of the Earth

It does not seem to us that the earth is moving, but the ground on which you stand is really moving faster than any passenger train that you ever saw. The whole earth is whirling around like a top, at a tremendous rate. This motion is called *rotation.* Since the earth turns completely around, or makes one complete rotation, every twenty-four hours, this motion is called its *daily rotation.*

The daily motion of the earth

It is this daily rotation that causes day and night. A lamp can light only one half of a ball at a time, as you know (Fig. 113). The sun is a kind of lamp for the earth ball, for all the light of our day comes from the sun. The sun, then, can light only one half of the great earth at a time.

How rotation causes day and night

This being the case, if our globe stood perfectly still, it would always be day on the side facing the sun, and night on the other side.

Since the earth rotates, the part that is getting the light is always changing. Thus, while the sun is always setting for some people, it is always rising for others. When it is noon where you live, it is midnight at the point opposite you, on the other side of the earth.

This is why there is a period of daylight, and a period of darkness, at the place where you live. These two periods together must last twenty-four hours, because the earth makes one complete rotation in that time.

How this motion causes sunrise and sunset

The daily rotation also causes sunrise and sunset. Our earth *seems* to be standing still, while each day the sun *seems* to rise in the east, to pass over us, and to set in the west. Yet we have just seen that the earth is not standing still by any means. Neither does the sun really "rise" and "set." The reason that the sun *seems* to rise in the east is that the earth is always rotating *toward* the east. We first get the light of the sun from the east because the earth is turning in that direction. The sun seems to set in the west because, as the earth continues to rotate, we see the sun last in the west.

Although men speak of the sun "rising" in the east and "setting" in the west, most men really know better. They express their thoughts in that way, simply because it is the easiest way. It would be difficult to think of any better way. Can you? Hundreds of years ago, however, all people thought that the earth stood still; that the sun really rose; and that after moving across the heavens, it really set in the west. Our use of the words *sunrise* and *sunset* has come down to us from that time.

Since the earth is rotating with so great speed, why can we not notice it? The answer is simple. Everything on the earth is moving with it, including ourselves. On that account there are no objects near by for us to rush past; yet the only way of seeing that we are moving, would be to observe that we were passing the objects about us.

Why are we not all hurled away from the earth? When the string breaks by which a stone is being whirled around, the stone flies off. Why, then, do not we, and other objects, such as the water in the ocean, fly away into space?

Why rotation does not hurl us away

The reason is that *the earth draws everything toward it*, and holds it there. If you push a book from your desk, it falls to the floor; and when you spring upward into the air you quickly return to the ground. All objects are drawn

FIG. 113. — The light from the candle lights only half of the apple that the boy is holding, just as the sun lights only half of the earth.

downward because the earth is pulling upon them. It attracts them much as a horseshoe magnet attracts a piece of iron. This force, which draws all objects to the earth, is called *gravity*, and you see how very important it is.

Meaning of axis and poles of the earth

You have perhaps watched a wheel spin about on a rod or pin, the rod or pin holding it in place and carrying its weight. The earth spins around in much the same way; but no rod is necessary to hold it in place. What a mighty rod it would have to be, if there were one! A spinning top does not turn around a rod, either. It turns around a line running

through its center, which is called its *axis* (Fig. 114). The earth also *rotates* around, or as we say, *on its axis*.

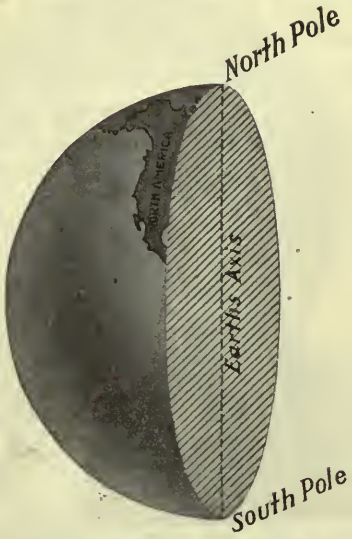

FIG. 114. — A drawing of the earth, cut in two, to show the position of the axis extending from pole to pole through the center of the earth.

The axis of the earth is really nothing that you can see. It can be represented, however, by a straight line that runs through the center of the earth, and extends to the surface in both directions. Such a line is called the *axis of the earth* (Fig. 114), and the two ends of the line are called the *poles of the earth*. One end of the axis is the *north pole*, and the other the *south pole*.

You can understand this better by running a long, slender stick, or needle, through the center of an apple. The stick represents the axis, and the places where its two ends appear at the surface represent the two poles of the earth. You can then spin the apple very much as the earth spins around on the line called its axis (Fig. 114).

If you were to go directly north from the place where you live, you would pass through the land of the Eskimos; and if you could go on, you would, in time, come to the north pole. Or, if you should travel due south, and went far enough, you would come to the south pole.

Many men have tried to cross the icy sea that surround the north pole; but, until 1909 no one had been able to get quite as far as th pole. In that year Commander Peary, afte many trials, at last reached the north pole; bu so far no one has yet reached the south pole. O course, Commander Peary did not find anythin at the pole to mark the place. He was able t tell that he was there by the position of the sun Had he been there during the night he woul have found the *north star*, toward which th earth's axis points, almost directly over his head

Midway between the poles we think of another line around the earth, on th outside (Fig. 115). This **Meaning of equator** is called the *equator*, because all parts of it are equally distant from each of the poles. The distance around the earth was given on page 88. What then, is the length of the equator?

As the earth spins on its axis, all points on the surface must go with it, just as every part of the skin of an apple turns with the apple Since the earth makes one complete turn each day, a man at the equator travels twenty-five thousand miles in twenty-four hours. What

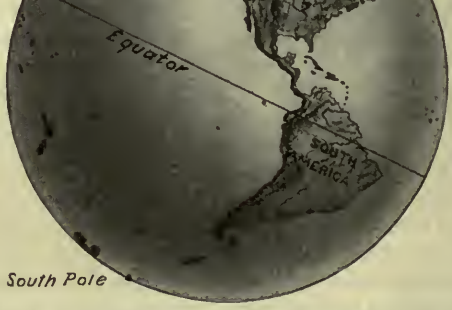

FIG. 115. — A drawing of that half of the sphere that includes the New World, — to show the position of the poles and the equator.

whirling motion that is! It is at the rate of over one thousand miles an hour, while the fastest trains travel little more than sixty miles an hour!

3. The Zones

The hottest part of the earth is near the equator. The reason for this is that the sun, at midday, is directly over the heads of the people who live in that region.

The zones and their boundaries

1. The torrid zone

You know that the sun's rays feel warmer at noon than in the early evening, because the sun is more nearly overhead at noon. For much

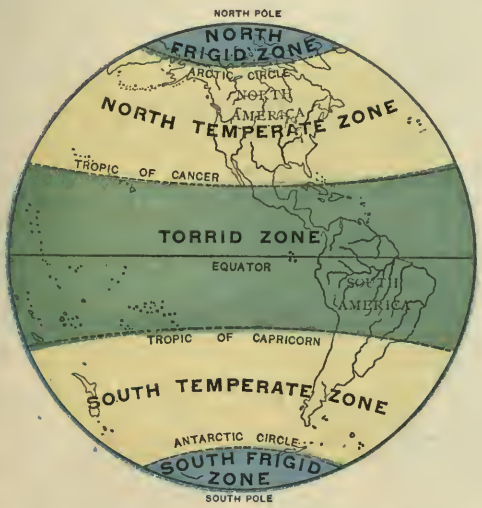

FIG. 116. — A map of the zones. The colors suggest *sharp* differences between the zones on the two sides of the boundaries; but you should remember that the changes are really *very* gradual.

the same reason the sun seems warmer in summer than in winter, because in summer it rises higher in the heavens. At the equator, however, and for many miles to the north and south of it, the sun is high in the heavens both in summer and winter. Thus there is a wide belt, extending all the way around the earth, that never has any winter; it is hot there every day in the year, as it is in summer at our home.

The northern boundary of this hot belt is called the *Tropic of Cancer* (Fig. 116); it is about fifteen hundred miles north of the equator. The southern boundary, which is likewise fifteen hundred miles from the equator, is called the *Tropic of Capricorn*. In all the vast space between these two lines, or *tropics*, the sun is straight overhead during a part of the year; and it is never, on any day, very far from that.

Point out these two tropics on Figure 116. How wide is this belt? Over all this vast region the heat is intense, or *torrid*, and for that reason this is called the *torrid zone*. It is also called the *tropical zone*, or the *tropical belt*, because it is bounded by the two tropics.

People who live within the torrid zone wear only the very lightest clothing. We have seen that this is true of the Negroes of Central Africa, whose homes lie within this belt. Point out Central Africa on Figure 106. Does any part of North America lie within the torrid zone? Walk toward that zone.

North of the torrid zone, the sun, even at noon, *never* stands directly overhead; and the greater the distance from the equator, the greater is the slant at which the sun's rays shine upon the earth. Exactly the same is true as one goes south of the torrid zone.

2. The two temperate zones

There is a belt, then, on each side of the broad torrid zone, where it is neither very hot nor very cold. The climate there is called *temperate*, and in these belts the summers are warm and the winters cold. The belt north of the torrid zone is called the *north temperate zone*. It extends all the way from the Tropic of Cancer to the Arctic Circle (Fig. 116). How much of the United States lies within this zone?

Here, at noon, even in summer, you find your shadow pointing north, for the sun is south of you. Notice the direction and length of your shadow at midday, and the position of the sun at that time. Do you know whether your shadow is longer in summer than in winter, or shorter? Which must it be, since the sun stands higher in the heavens in summer than in winter?

The belt south of the torrid zone is called the *south temperate zone*, as you might suppose. It extends from the Tropic of Capricorn to the Antarctic Circle. People living there find their shadows at noon always pointing south, since the sun is north of them. Their seasons, also, are just the opposite of ours; when we have summer, they have winter; and when we have winter, they have summer.

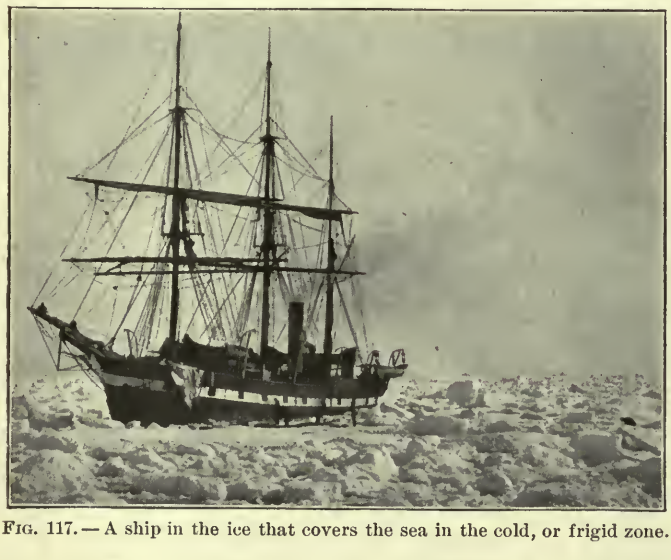

FIG. 117. — A ship in the ice that covers the sea in the cold, or frigid zone.

Near the poles the rays of the sun reach the earth at a still greater slant, much as they do with us early in the morning, or late in the afternoon. Even in the middle of the day the sun lies low in the sky, near the horizon, and the shadows are very long. Therefore, the climate there is very cold, or *frigid;* the ground never thaws out; and the ice never entirely disappears from the sea (Fig. 117). Indeed, there is never any warm summer near the poles, just as there is never any winter near the equator.

3. The two frigid zones

The two regions around the poles are called the *frigid zones*. That about the north pole is called the *north frigid zone*, and the other, the *south frigid zone*. Since they surround the poles, they are also sometimes called the *polar zones*. The north frigid zone is the home of the Eskimos, but there are no people living in the south frigid zone.

The hemispheres

Since the equator is midway between the poles, it divides the earth, or sphere, into two equal parts, called *hemispheres* (*hemi*=half). The half of the earth north of the equator is called the *northern hemisphere* and that south of it the *southern hemisphere*. In which of these hemispheres is the United States?

The earth may also be divided into halves by a circle running north and south through both poles. The western half, in which the New World lies, is called the *western hemisphere*. The eastern half, containing the Old World, is called the *eastern hemisphere*. You will find these two hemispheres represented in Figure 106. In which of them is your home?

4. Latitude and Longitude

How places are located on the earth

If we learn that a certain place is in the torrid zone, or in one of the other zones, we know something about its location; yet we do not know very much about it, because each zone is so wide and long.

To help locate places more exactly other circles than those already mentioned are used upon maps and globes. Some of these circles extend east and west, on each side of the equator, as you can see in Figure 106. The distance between them is measured, not by miles, but by degrees, each of which is equal to almost seventy miles. How many degrees are there from one of these circles to the next, in Figure 106? About how many miles is that? We can thus quickly learn how far any place that is on or near one of these circles is from the equator. For example, how many degrees north of the equator is New York City? (Fig. 138) Chicago? How many miles would that be?

1. Finding their latitude

Instead, however, of saying that a place is a certain number of degrees north or south of the equator, we say that it is in so many degrees *north latitude* or *south latitude.* Latitude means simply the distance north or south of the equator. Places north of the equator are in *north latitude* and those south of it, in *south latitude.* The circles running east and west, which are drawn to show the latitude of places, are called *circles of latitude.* By their help, find the latitude of New Orleans; of Boston.

Other circles, extending north and south, from pole to pole, help to locate places in an east and west direction. A line that extends through England is agreed upon as the starting point in measuring. Places east of this line are said to be so many degrees in *east longitude;* places west of it, so many degrees in *west longitude.*

2. Finding their longitude

Longitude, as you see, means simply the distance east or west of this principal line; and these circles are called *circles of longitude.* In what longitude is New York City? Give both the latitude and the longitude of Chicago. Locate other places in the same way, for example, your own home.

FIG. 118. — A map to show the land in the northern hemisphere that nearly surrounds the north pole.

5. The Continents

On page 45 you learned that there is about three times as much water as land upon the surface of the earth. By examining the globe you can see that most of the land is in the northern hemisphere. It almost surrounds the north pole, as you can see from the globe, or from Figure 118.

The five continents

In this figure two great masses of land are shown, one called Eurasia and the other North America. Besides these, there are three other great divisions of land — South America, Africa, and Australia. Point these out on the globe. Thus there are five great divi-

sions of land upon the earth, and each of them is called a *continent*.

North America and South America

1. Their shape and climate

The continent of *North America* is the one on which you live. Notice its form, which is clearly shown in Figure 119. It is quite broad near the north pole, and tapers down almost to a point just north of the equator. This gives it the shape of a triangle. Make a drawing of it.

FIG. 119. — The continents of North and South America.

What part of this continent is in the frigid zone? In the torrid zone? In the temperate zone?

South America also has the form of a triangle. Draw its outline by using only three straight lines. Which of the American continents seems to have the more irregular coast line? Which, therefore, has the greater number of bays, capes, and peninsulas?

In what zones does South America lie? Point to parts of both North America and South America where there is never any snow. Point to a part of North America where there is always snow.

Where must the Eskimo girl, Agoonack, one of the Seven Little Sisters, have lived (Fig. 120)? How would the climate change if you were to travel from the northern part of North America to the southern tip of South America? What differences would you expect to find in the plants? In the clothing of the people? Write a story about such a journey.

FIG. 120. — An Eskimo boy, dressed in furs, although the picture was taken in August.

These two continents together are called the *two Americas*. They form what is known as the *New World*, which Columbus discovered.

2. The Isthmus of Panama, connecting the two

You can see by the map that the two Americas are connected by a long, narrow neck of land, called an *isthmus*. This is the *Isthmus of Panama*. Any vessel that happens to be on one side of these continents, and that must reach the other side, has to pass all the way around South America. If this isthmus were not in the way, a ship might sail directly between the two continents. To save so long a journey, the United States government, with the help of many thousands of men, is now digging a channel, or *canal*, across this isthmus. When finished, it will be broad enough and deep enough to let ocean vessels pass through. Then ships going from the eastern to the western coast of our country will save a journey of thousands of miles.

The *Old World*, which includes Eurasia and Africa, contains much more land

FIG. 121. — A map of Eurasia and Africa.

than does the New World (Fig. 121). The largest mass, which is almost entirely surrounded by water, is called *Eurasia*. You will notice that it is connected with Africa by a narrow isthmus. This isthmus, called the *Isthmus of Suez*, already has a ship canal through it. Thus vessels may go from one ocean to the other without having to travel all the way around Africa, as they used to do.

Eurasia

The northern part of Eurasia lies in the north frigid zone, on the opposite side of the north pole from North America (Fig. 118). The continent extends a great distance east and west, as you see. Find for yourself how far south it reaches, and through what zones it extends. The eastern and larger part of the continent is called *Asia*. Read in the "Seven Little Sisters" about Pen-se, the Chinese girl, whose home was in Asia (Fig. 122).

1. Asia

The western part of Eurasia is called *Europe*. Long ago, before Columbus made his voyage to the New World, the most highly civilized people lived in Europe. The homes of Jeannette and Louise, two of the Seven Little Sisters, were in that country. If you have read the story, can you tell something about each of them?

2. Europe

Europe is usually considered one continent, and Asia another; but, as you can see from Figure 106, they are more closely united to each other than any other two continents are. For this reason Europe and Asia are often classed together as one continent, and this is called Eurasia. The name is made of "Eur" from Europe, and "Asia."

3. Reason for the name *Eurasia*

This makes the largest continent on the globe. You see that it is very irregular, even more so than North America. Point toward this continent. Walk toward it. Which is probably its warmest part?

FIG. 122. — Chinese children.

South of Europe is the continent of *Africa*. Draw its outline and compare it with that of South America. Is its coast line regular or irregular? In what zones does it lie?

Africa

The Desert of Sahara, where the nomads live, is in the northern part of Africa (Fig. 123).

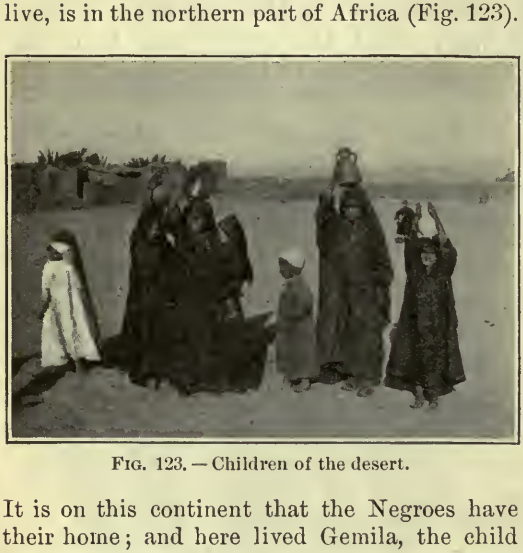

FIG. 123. — Children of the desert.

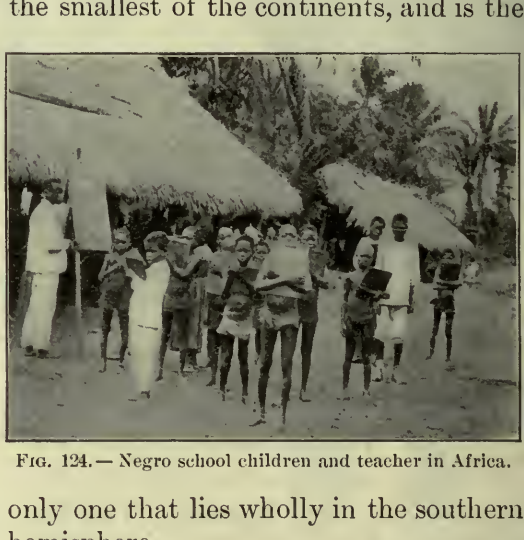

FIG. 124. — Negro school children and teacher in Africa.

It is on this continent that the Negroes have their home; and here lived Gemila, the child of the desert, and Manenko, the little dark girl (Fig. 124), two of the Seven Little Sisters. The Negroes of our country are descendants of people who were brought from Africa many years ago.

Look on a globe to see in what direction you would have to travel if you were going to Africa. Could you reach Africa by going in any other direction?

The many large islands south and southeast of Asia are called the *East Indies;* and the central one of the peninsulas on the south side of Asia is called *India*. In Figure 107, find this peninsula and three islands.

The East Indies and Australia

It was this part of the world that Columbus hoped to reach when he sailed westward from Europe on his wonderful voyage. Can you show on a globe that, if the New World had not been in his way, he might have reached India and the East Indies?

None of the East Indies is large enough to be called a continent. Just south of them, however, is an island, called *Australia*, so large that it is generally classed as a continent. It is the smallest of the continents, and is the only one that lies wholly in the southern hemisphere.

Find Australia on the globe; also in Figure 106. Is the northern part or the southern part the hotter? Why should you expect any difference in temperature between north and south?

6. THE OCEANS

The ocean water forms only one body of water; but for long distances some parts are largely separated from others by the continents. These separate parts are given different names.

The parts of the ocean that are of most importance to us are those that lie to the east and west of the United States. That on the east, between North America and Europe, is called the *Atlantic Ocean*

The Atlantic Ocean

(Fig.125). This is the water that must be crossed in going to Europe; and it was this ocean that Columbus crossed. Many things that we use are brought to us across the Atlantic from the Old World, and we send many of our products across this ocean to Europe.

On Figure 125 observe that the Atlantic Ocean extends far to the south, between South America and Africa, as well as far to the north. In what part must the water be warmest? In what parts is it cold, and perhaps covered with ice? On the globe, find which continents border this ocean.

The Pacific Ocean

The part of the ocean lying west of North America is called the *Pacific Ocean* (Fig. 126). What continents border it (Fig. 107)? It is the largest of the oceans, and covers more than one third of the earth's surface. Walk toward it. In what zones does it lie?

FIG. 125.—Map of the Atlantic Ocean.

Not so many products are brought across the Pacific Ocean for our use as across the Atlantic. Yet Japan, China, and the Philippine Islands are on its farther side, as you can see on the map. We ship some articles to these countries, and they send some to us. Many Chinese and Japanese have come across this ocean to the United States. Where might they land?

FIG. 126.—Map of a part of the great Pacific Ocean.

The Indian Ocean

On Figure 106 you will find a third great body of water, called the *Indian Ocean* (Figs. 121 and 127). What continents border it? Notice that it lies directly south of India, the peninsula in Asia which Columbus was seeking (p. 86). In what zones does this ocean lie?

There are two other oceans, making five in all. One of these is the *Arctic Ocean*, which extends around the north pole, and is almost shut in by Eurasia

FIG. 127. — The Indian Ocean and the western part of the Pacific Ocean.

and North America (Fig. 118). **The Arctic Ocean** Notice that it is connected with the Pacific Ocean by only a very narrow body of water, or *strait*, called Bering Strait (Fig. 107). North America and Asia come close together at that point.

The Arctic Ocean has a freer connection with the Atlantic on the east. Huge masses of ice, called *icebergs* (Fig. 128), often float down from the Arctic into the Atlantic Ocean. Sometimes there are so many that they are dangerous to vessels sailing between North America and Europe.

Figure 129 shows the *Antarctic Ocean*, which surrounds the south pole. There is a great mass of land around that pole called *Antarctica*. It is large enough to be called a continent; but, since no one lives upon it, and since it is covered with snow and ice all the year through, very little is known about it. **The Antarctic Ocean**

FIG. 129. — Map of the Antarctic Ocean, which surrounds Antarctica.

FIG. 128. — Large numbers of icebergs floating in the water of the Arctic Ocean.

This ice-covered land is surrounded by the Antarctic Ocean, on which there is always much floating ice. Observe that this ocean is not separated from the three great oceans by land, as the Arctic is. Are the Arctic and Antarctic oceans of more,

or less, importance to us than the other oceans? Why?

The depth of the ocean

The water in the ocean occupies great hollows on the surface of the earth. The depth of this water varies greatly, though on the average it is a little over two miles deep. In many places, however, the ocean is more than four miles deep; and in one place, in the Pacific Ocean, the depth is nearly six miles. If the highest mountain in the world could be placed in the water at this point, its peak would not rise above the level of the sea.

The bottom of the ocean

Beneath the oceans there is solid rock, just as there is beneath the soil of the land. This rock is covered with a coat of mud made of the shells of tiny animals, most of them smaller than the head of a pin. They have lived near the surface of the sea, and upon dying, their shells have slowly dropped to the bottom. Some of the chalk used in schools was once just such mud, before it was raised to form layers of chalk on the dry land.

The bed of the ocean lies so deep below the surface of the water that it is as dark there as our darkest night. Yet fishes are living in these

FIG. 130. — A fish caught on the bottom of the deep ocean, where no sunlight ever reaches.

dark ocean depths (Fig. 130). As there is no sunlight, they have little use for eyes, and some of them have no eyes. Others see by means of the light that they themselves make, called *phosphorescent* light. This is like the light that the firefly gives out at night.

The islands in the ocean

The bottom of the ocean is, for the most part, a level plain. In many places, however, there are islands rising from the sea floor, as a glance at the map will show.

Many of these islands are *portions of mountain chains*. They are like the mountains on the continents, with only the highest peaks rising above the water. Other islands are the peaks of *volcanoes*. These have been made of melted rock, or *lava*, that has flowed up from inside the earth. Still others are what are known as *coral islands*. These have been formed in the following interesting way: —

Some of the tiny creatures that live in the ocean are called *coral polyps*. They build hard,

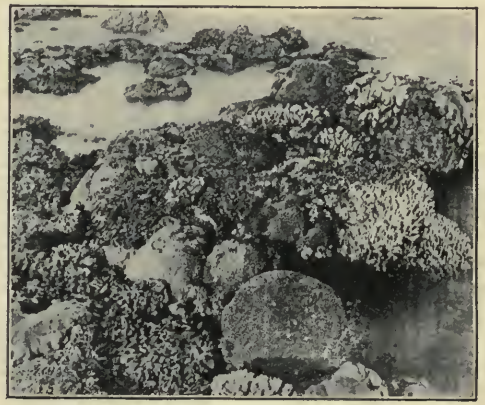

FIG. 131. — Coral growing in the sea.

limy coral (Fig. 131), such as you have no doubt seen; it is as hard as rock. Where the ocean water is warm, as in the torrid zone, these animals live in immense numbers, millions of them around a single island.

Each polyp helps to build the coral, which is a sort of house in which it lives. When it chooses to do so, the polyp can draw itself into the little cave that forms its home. It can thus escape enemies that might devour it.

At other times the polyp stretches out beyond the surface of the hard coral, spreading out like a fully blossomed flower. The polyps differ greatly in color, being white, pink, purple, red, yellow, brown, and of other colors. It is a truly beautiful sight to see them spread out in the water, giving the appearance of a flower garden in the sea.

When these coral animals die, the hard, stony homes that they have built, remain.

Then other polyps build upon these remains, and this continues until the polyps have built the coral up to the surface of the water. It is in this way that coral islands are formed (Fig. 132),

Fig. 132. — A ring-shaped coral island in the open ocean.

and there are thousands of them in the warm oceans, especially in the Pacific and Indian oceans.

Review Questions

Form and Size. 1. What did people formerly think about the form of the earth? 2. What is its form? 3. Relate the story of Columbus. 4. Why did he call the savages Indians? 5. Why was the land he discovered called the New World? 6. What makes Magellan's voyage important? 7. Explain why the earth does not appear to us to be a sphere. 8. What is meant by the diameter of the earth? By the circumference? What is the length of each?

Daily Motion. 9. Describe the daily motion of the earth. What is this motion called? 10. How does this motion cause day and night? 11. How does it cause sunrise and sunset? 12. Why can we not observe that the earth is rotating? 13. Why is not every loose object hurled from the earth by this rapid motion? 14. What is meant by the axis of the earth? By the poles of the earth? 15. Walk toward each of the poles. 16. What is meant by the equator? How long is it?

The Zones. 17. Give the cause of the great heat in the torrid zone. 18. How wide is that zone, and what are its boundaries? 19. Where are the two temperate zones? 20. Why is the heat less there than in the torrid zone? 21. Where are the frigid zones? 22. What is meant by the northern hemisphere; by the southern hemisphere? 23. What is meant by the eastern and the western hemispheres?

Latitude and Longitude. 24. How are places located on the earth? 25. What is latitude? Longitude?

The Continents. 26. Name the five continents, counting Eurasia as one. 27. Write their names. 28. Walk toward each. 29. What is the shape of North America; of South America? Show the shape of each by a drawing. 30. Tell about the climate of each. 31. Of what importance is the Isthmus of Panama? 32. What can you tell about Eurasia? Why this name? 33. Tell what you can about Africa. 34. Locate and give the principal facts about Australia. 35. What part of the world, near Australia, was Columbus hoping to reach?

The Oceans. 36. What two oceans are of most importance to us? 37. What do you know about each of them? 38. Where is the Indian Ocean? 39. Where are the Arctic and Antarctic oceans? 40. Why are they of little importance to us? 41. What can you tell about the depth of the ocean? 42. About the ocean bottom? 43. What are the three causes for islands in the ocean? 44. What is the result of the work of the coral polyps? 45. What oceans touch North America? 46. Name the five oceans. Write their names.

Suggestions

1. Trace Columbus's voyage on a globe. Find India and see how one can go by water from Europe to India by sailing eastward; by sailing westward. 2. Make a sphere in clay. Measure its diameter with a needle, and its circumference with a string. 3. Locate the poles on such a sphere; and also represent the equator. 4. With a globe or an apple, and a lamp, show how it is day on one side of the earth while it is night on the other side. Show also why the sun appears to rise in the east. 5. Who were Atlas and Aurora? 6. Where did people, long ago, suppose that the sun went at night? 7. Write a story telling the kinds of clothing you would need in going from the north to the south pole. 8. Would you expect a sudden change in temperature in crossing the Tropic of Cancer or of Capricorn? Why? 9. If there were no watches or clocks, how could you learn the time of day from your shadow? 10. Find out about some of the men who have tried to reach the north pole. 11. Examine a piece of coral. If possible, secure a piece for the school collection.


OREGON
Columbia R.
Missouri R.
Yellowstone R.
Platte R.
ALGONQUINS
Lake Superior
Lake Michigan
Lake Huron
Lake Erie
L. Ontario
Taloussac 1664
Quebec 1608
Montreal
St. Lawrence River
CANADA
LOUISIANA TERRITORY
NEW FRANCE
Mississippi R.
Missouri R.
Arkansas R.
Ohio R.
Red R.
Sabine R.
Colorado R.
Gila R.
Rio Grande
Santa Fe 1550
Jamestown 1607
St. Augustine 1565
ENGLISH TERRITORY
SPANISH TERRITORY
FLORIDA
Okeechobee L.
GULF OF MEXICO
TROPIC OF CANCER
CUBA
PACIFIC OCEAN
ATLANTIC OCEAN
130°
125°
120°
115°
110°
105°
100°
95°
90°
85°
80°
75°
70°
65°
60°
45°
40°
35°
30°
25°
20°
Longitude West from Greenwich
WILLIAMS ENGRAVING CO., N.Y.

FIG. 133.

PART III. NORTH AMERICA

SECTION I. GENERAL FACTS

1. Divisions of North America

If you look on the map of North America (Fig. 134), you will see that the continent is divided into several countries. In the center, extending from ocean to ocean, is the *United States*. North of our country is *Canada*, and northwest of that is *Alaska*. South of us lies *Mexico*, and southeast of that is *Central America*. Make a simple drawing of North America, and upon it mark off each of these sections.

The principal divisions of North America

You remember that Spain was the nation that helped Columbus to make his discovery of America. After his voyage, many Spaniards came over and settled in the southern part of the continent. They occupied the portions now marked Mexico and Central America. All this section, and some of the land to the north of it, now a part of the United States, was for many years owned by Spain Indeed, at one time it all bore the name of *New Spain;* but the government by Spain was so very bad that the people rebelled against it, and, by war, secured their independence.

Some reasons for these divisions

1. Mexico and Central America

Although the Spanish language is still spoken in all that section, it is now divided into several independent countries. The larger part of it, called *Mexico*, is under one government; the part of it marked *Central America* is divided into several little nations. The only reason for calling this part of the continent Central America is its central position between two continents. There is really no country of that name.

The small country of *Panama* occupies the narrow Isthmus of Panama, which joins Central America with South America. It is here that the Panama Canal is being dug to connect the Atlantic and Pacific oceans (p. 94).

Other nations besides Spain sent explorers to America, and made settlements. Chief among these were the English and the French. The English settlers at first made their homes along the eastern coast, as in Massachusetts and Virginia. The French chose the valleys of the St. Lawrence and Mississippi rivers. Find these rivers on the map. As the result of war, the English obtained control of the French territory, and English became the principal language of all the continent north of Mexico.

2. The United States

Even now, however, one is reminded of the old French rule. French is still heard in New Orleans, near the mouth of the Mississippi River, and it is the common language in the

city of Quebec, on the St. Lawrence River. Point out these cities.

The names of many places in the Mississippi and St. Lawrence valleys, such as New Orleans, St. Louis, and Montreal, are French. They were given when these places belonged to France.

For many years the colonies in America were governed by England; but finally many of the colonists became dissatisfied with English rule. As a result, a war for independence broke out, which lasted several years, under the leadership of General George Washington (Fig. 98). The colonists declared themselves independent on July 4, 1776, a date whose anniversary you celebrate every year. Independence was not gained, however, until later, after several years of hard fighting and much suffering.

Our ancestors, after this war, formed a government of their own, which they called the United States. At first there were only thirteen small states in the Union, all near the Atlantic coast. Gradually other states and territories were added, until our country now extends across the continent, as you see.

3. Canada and Newfoundland

England was able to keep a large part of the continent, which is called the *Dominion of Canada*. Canada, which is still a British colony, is a union of states, or *provinces*, like our United States.

You observe, on the map, the large island of *Newfoundland*, in the extreme eastern part of the continent. This also was kept by England and is still a British colony; but it has never joined the Dominion of Canada and has, therefore, a separate government.

4. Alaska

The extreme northwestern part of North America, called *Alaska*, was first explored by the Russians, and they owned it for a long time. Russia finally sold it to the United States, and it still belongs to us.

The boundaries of these countries

Of course, where two countries lie side by side, as do Canada and the United States, there must be some place where one country ends and the other begins. Such a place is called a *boundary*. The boundary lines between the different nations are marked on the map (Fig. 134) by heavy lines. Point them out.

In some parts you will see that a *natural boundary*, such as a river or a chain of lakes, has been chosen to separate two neighboring countries. In other places the boundary does not follow any natural line. In some cases it is even a straight line, cutting across rivers, lakes, and mountains. Examine the boundary of the United States, to see how much of it is natural.

Where the boundary is only a straight line, it is marked by a row of posts or stone pillars, a few rods apart. These you could easily see if you were to cross from one country to another, where there is such a boundary. On your drawing of North America, mark those boundaries of the United States which are natural.

Review Questions

1. Name the principal parts of North America. Write these names. 2. State some of the reasons for such a division of the continent: (*a*) for Mexico and Central America; (*b*) for United States; (*c*) for Canada and Newfoundland. 3. What do you know about Alaska? 4. What natural boundaries has the United States?

2. Maps of North America

Study of maps

1. Political Maps

Figure 134 is a map of North America showing the boundaries of the different countries, and the location of the largest rivers and cities. Such a map is called a *political* map.

Find Greenland on this map. Would you expect it to be an important island? Why?


NORTH AMERICA
Scale of Miles
0 100 200 400 600 800 1000
Relative population of largest cities shown by size of type
Capitals
ARCTIC OCEAN
PACIFIC OCEAN
ATLANTIC OCEAN
DOMINION OF CANADA
UNITED STATES
MEXICO
GREENLAND
(To Denmark)
ALASKA
CENTRAL AMERICA
SOUTH AMERICA
ASIA
GULF OF MEXICO
CARIBBEAN SEA
HUDSON BAY
Baffin Bay
Davis Strait
Beaufort Sea
Gulf of Alaska
ROCKY MOUNTAINS
ALLEGHENY MTS.
SIERRA MADRE
WEST INDIES
GREATER ANTILLES
ARCTIC CIRCLE
TROPIC OF CANCER
EQUATOR
Longitude West from Greenwich
New York
Chicago
Philadelphia
St. Louis
Boston
Baltimore
San Francisco
Montreal
Mexico
Havana
New Orleans
Washington
Cincinnati
Cleveland
Buffalo
Detroit
Milwaukee
Minneapolis
St. Paul
Kansas City
Omaha
Denver
Salt Lake City
Seattle
Portland
Los Angeles
Toronto
Quebec
Ottawa
Halifax
Winnipeg
Edmonton
Calgary
Vancouver
Victoria
Regina
Spokane
Helena
Dallas
Houston
Galveston
Atlanta
Memphis
Louisville
Charleston
Savannah
Mobile
Macon
Wilmington
Norfolk
Guthrie
Santa Fe
Monterey
Guadalajara
Vera Cruz
Merida
Acapulco
Kingston
Port au Prince
Panama
Colon
Managua
San Jose
Costa Rica
Tegucigalpa
Honduras
Nicaragua
Salvador
San Salvador
Guatemala
New Guatemala
Belize
Brit. Honduras
Bermuda Is.
Bahama Islands
Porto Rico (U.S.)
Jamaica
Haiti
Sto. Domingo
Cuba
Newfoundland
St. Johns
Nova Scotia
Cape Breton
Cape Race
Labrador
Iceland
Reikiavik
Mt. McKinley
Mt. St. Elias
Mt. Logan
Mt. Whitney
Pikes Peak
Fremont Peak
Mt. Brown
Klondike Region
Yukon R.
Mississippi R.
Missouri R.
Ohio R.
Rio Grande
Great Salt Lake
Great Slave Lake
Great Bear Lake
Lake Winnipeg
Lake Superior
Hudson Strait
Bering Strait
Bering Sea
Nome
Juneau
Sitka
Pt. Barrow
Cape Hatteras
Cape Sable
Cape San Lucas
Gulf of California
Gulf of Campeche
Yucatan Channel
Florida Str.
Isthmus of Tehuantepec
Isthmus of Panama
Cascade Range
Coast Range
Sierra Nevada
Cape Flattery
Cape Blanco
Cape Mendocino
Magdalena Bay
Revilla Gigedo Is.
Vancouver I.
Queen Charlotte Islands
Alexander Archipelago
Kadiak I.
Wrangell I.
Parry Is.
Ellesmere Land
N. Devon
Baffin Land
James Bay
Gulf of St. Lawrence
Chesapeake Bay
Delaware Bay

FIG. 134.


PHYSICAL MAP OF
NORTH AMERICA
Scale of Miles
0 200 400 600 800 1,000 1,200
KEY
Over 6,500 ft.
From 1,650 to 6,500 ft.
From 650 to 1,650 ft.
From 0 to 650 ft.
Sea Level
From 0 to 6,500 ft.
From 6,500 to 13,000 ft.
Below 13,000 ft.
Longitude West from Greenwich
WILLIAMS ENGRAVING CO., N.Y.
ARCTIC OCEAN
ASIA
BERING SEA
Bering Strait
Pt. Barrow
BEAUFORT SEA
PRINCE PATRICK I.
PARRY ISLANDS
MELVILLE
Melville Sound
BANKS LAND
PRINCE ALBERT LAND
Magnetic Pole
GRANT LAND
ELLESMERE LAND
BAFFIN BAY
BAFFIN LAND
GREENLAND
Davis Strait
C. Farewell
ICELAND
C. Prince of Wales
Yukon R.
Mt. McKinley
ALASKA
ALASKA PEN.
KODIAK
Mt. St. Elias
Mt. Logan
Mt. Fairweather
Great Bear Lake
ARCTIC CIRCLE
Mackenzie R.
Great Slave Lake
Hudson Strait
HUDSON BAY
James Bay
LABRADOR PENINSULA
LAURENTIAN HIGHLANDS
NEWFOUNDLAND
Gulf of St. Lawrence
C. Race
PENINSULA OF NOVA SCOTIA
C. Sable
C. Cod
LONG I.
Peace R.
L. Athabasca
Athabasca R.
Saskatchewan
S. Saskatchewan R.
Nelson R.
Lake Winnipeg
NORTHERN PLAIN
GREAT CENTRAL PLAIN
CORDILLERAN HIGHLAND
ROCKY MOUNTAINS
PACIFIC SLOPE
QUEEN CHARLOTTE IS.
VANCOUVER I.
C. Flattery
Fraser R.
CASCADE MTS.
Mt. Rainier
Columbia R.
Snake R.
Missouri
Yellowstone R.
Mt. Shasta
C. Mendocino
COAST RANGE
SIERRA NEVADA
Great Salt Lake
GREAT BASIN
Mt. Whitney
C. Conception
GRAND CANYON
Colorado R.
Colorado Plateaus
Platte R.
Arkansas R.
Red R.
Brazos R.
Rio Grande
Mississippi R.
River
L. Superior
L. Michigan
L. Huron
L. Erie
L. Ontario
THE GREAT LAKES
St. Lawrence R.
Ohio R.
ALLEGHENY PLATEAU
APPALACHIAN HIGHLAND
ATLANTIC PLAIN
Chesapeake Bay
C. Hatteras
BERMUDA IS.
ATLANTIC OCEAN
PACIFIC OCEAN
GULF PLAIN
PENINSULA OF FLORIDA
BAHAMA ISLANDS
GULF OF MEXICO
LOWER CALIFORNIA PEN.
Gulf of California
C. San Lucas
SIERRA MADRE
TROPIC OF CANCER
WEST INDIES
HAITI
PORTO RICO
JAMAICA
Gulf of Campeche
PENINSULA OF YUCATAN
Orizaba Peak
Popocatepetl
ISTHMUS OF TEHUANTEPEC
CARIBBEAN SEA
L. Nicaragua
ISTHMUS OF PANAMA
Gulf of Panama
SOUTH AMERICA

FIG. 136.

FIG. 135. — Relief map of North America.

Trace the Mississippi River. Three other great rivers of North America are the St. Lawrence, the Mackenzie, and the Yukon. Find each. What would you say about the importance of the Mackenzie and Yukon rivers, in comparison with that of the St. Lawrence and the Mississippi? Why?

2. Relief Maps

Figure 135, a *relief* map, is a very different kind of map from Figure 134. Its purpose is to show the heights of the land, or the higher and lower parts of the continent. There is still another kind of map called a *physical* map, of which Figure 136 is an example. It also shows the heights of the land, not by the shading, but by colors. The different colors show the different heights, as is explained by the key under the map.

3. Physical Maps

What great mountain system, or highland, do you find in the western part of North America? Find it on both the relief and the physical maps. What great highland do you find in the east? In what direction does each of these highlands extend? Which is the broader? Which the higher? Trace, as nearly as you can, the boundaries of each.

Where is the lowest land between these two highlands? Show the length and width of the Mississippi Valley. Notice the slope east of the Appalachian Mountains (Fig. 137). Is it longer or shorter than that west of the western Highlands? What are the main slopes in North America? Upon which of these slopes do you live? Point as nearly as you can to the place where your home is.

FIG. 137.—A section across the United States from the Atlantic to the Pacific ocean, showing the highlands and lowlands.

On Figure 134 find New York and San Francisco. If you were to travel westward from the former to the latter place, you would have to pass over many hills, valleys, and mountains. Some of the slopes would be short and gentle; others would be very long, sometimes gentle, sometimes steep. Make a drawing showing the chief slopes you would cross in making that journey.

Review Questions

1. What do you understand by a political map? 2. By a relief map? 3. By a physical map? 4. What are the principal slopes in North America? 5. Name the principal mountain ranges. 6. The principal rivers. 7. The largest lakes. 8. The largest islands, peninsulas, gulfs, and bays. 9. Make a drawing of the continent, putting in the names of all these.

SECTION II. THE UNITED STATES

1. General Facts

Map study

1. What waters border the United States? 2. What countries? 3. Find the Appalachian Mountains. 4. What are the names of the mountain chains in western United States? 5. Make a drawing of the Mississippi River and its larger tributaries. 6. Make a drawing of the United States, putting on it the largest rivers and lakes, with their names; also the largest cities. (You will find a list of them in the Appendix.)

The extent of the United States

If you look on Figure 138 you will see that its scale is about an inch to 325 miles. Knowing this fact find how many miles it is across our country from north to south, measuring from our northern


UNITED STATES
WESTERN PART
Scale of Miles
0 50 100 200 300 400 500
WILLIAMS ENGRAVING CO., N.Y.
115° Longitude West 110° from Greenwich 105° 100° 95°
130° 125° 120° 115° 110° 105° 100° 95°
BRITISH COLUMBIA
DOMINION OF CANADA
ALBERTA
SASKATCHEWAN
MANITOBA
ONTARIO
Edmonton
Calgary
Vancouver
Victoria
Regina
Winnipeg
Lake Winnipeg
L. Winnipegosis
L. Manitoba
L. of the Woods
Rainy L.
Rainy R.
C. Flattery
VANCOUVER I.
PACIFIC OCEAN
WASHINGTON
Bellingham
Mt. Baker
Everett
Seattle
OLYMPIA
Tacoma
Roslyn
Ellensburg
Mt. Rainier
N. Yakima
Spokane
Walla Walla
Snake R.
Columbia R.
Astoria
Portland
SALEM
Mt. Hood
Eugene
OREGON
Baker City
Klamath L.
COAST
CASCADE MTS.
IDAHO
BOISE
Twin Falls
Pocatello
Montpelier
Salmon R.
BITTER ROOT MTS.
MONTANA
Flathead L.
Great Falls
HELENA
Anaconda
Butte
Bozeman
Billings
Missouri R.
Milk R.
Yellowstone R.
ROCKY MOUNTAINS
WYOMING
YELLOWSTONE NATIONAL PARK
Yellowstone L.
Fremont Peak
CHEYENNE
NORTH DAKOTA
Grand Forks
BISMARCK
Fargo
Devils L.
SOUTH DAKOTA
Aberdeen
Watertown
PIERRE
Deadwood
Lead
BLACK HILLS
Sioux Falls
MINNESOTA
Crookston
Fergus Falls
Minneapolis
St. Paul
Mankato
Red L.
L. Itasca
NEBRASKA
Niobrara R.
Platte R.
Omaha
LINCOLN
Beatrice
Republican R.
IOWA
Sioux City
Ft. Dodge
DES MOINES
Council Bluffs
St. Joseph
MISSOURI
Kansas City
KANSAS
TOPEKA
Smoky Hill R.
Wichita
Winfield
Joplin
COLORADO
Denver
Leadville
Colorado Springs
Pikes Peak
Cripple Creek
Pueblo
Arkansas R.
UTAH
SALT LAKE CITY
Great Salt Lake
Ogden
Utah L.
Sevier L.
WASATCH MTS.
NEVADA
Reno
Carson
Virginia City
Humboldt R.
RALSTON DESERT
CALIFORNIA
SIERRA NEVADA
Mt. Shasta
Lassens Pk.
C. Mendocino
SACRAMENTO
Oakland
San Francisco
San Jose
Stockton
Fresno
Mt. Whitney
Tulare L.
Pt. Conception
Pasadena
Los Angeles
Mt. S. Bernardino
San Diego
ARIZONA
Prescott
PHŒNIX
Gila R.
Yuma
Tucson
Bisbee
GRAND CANYON
NEW MEXICO
SANTA FE
Albuquerque
Las Cruces
Rio Grande
Pecos R.
OKLAHOMA
GUTHRIE
Oklahoma
Ardmore
Cimarron R.
Canadian R.
TEXAS
Texarkana
Dallas
Ft. Worth
Shreveport
Waco
AUSTIN
Beaumont
Houston
Galveston
San Antonio
El Paso
Laredo
Brownsville
ARKANSAS
LOUISIANA
MEXICO
Hermosillo
Guaymas
Chihuahua
Monterey
Culiacan
Durango
Mazatlan
Victoria
Zacatecas
S. Luis Potosi
Tampico
Tepic
La Paz
C. San Lucas
LOWER CALIFORNIA
Gulf of California
GULF OF MEXICO
TROPIC OF CANCER

FIG. 138.


UNITED STATES
EASTERN PART
Cities with over 1,000,000 — New York
Cities with 500,000 to 1,000,000 — Boston
Cities with 200,000 to 500,000 — Buffalo
Other Places — Denver
Capitals with less than 200,000 — DOVER
Scale of Miles
0 50 100 200 300 400 500
Longitude 90° West from 85° Greenwich
WILLIAMS ENGRAVING CO., N.Y.
DOMINION OF CANADA
ONTARIO
QUEBEC
UNGAVA
MANITOBA
NEW BRUNSWICK
NOVA SCOTIA
NORTH DAKOTA
SOUTH DAKOTA
NEBRASKA
KANSAS
OKLAHOMA
TEXAS
MINNESOTA
IOWA
MISSOURI
ARKANSAS
LOUISIANA
WISCONSIN
ILLINOIS
MICHIGAN
INDIANA
OHIO
KENTUCKY
TENNESSEE
MISSISSIPPI
ALABAMA
GEORGIA
FLORIDA
SOUTH CAROLINA
NORTH CAROLINA
VIRGINIA
WEST VIRGINIA
PENNSYLVANIA
NEW YORK
VERMONT
MAINE
MASS.
CONN.
DELAWARE
GULF OF MEXICO
ATLANTIC OCEAN
MEXICO
CUBA
BAHAMA ISLANDS
TROPIC OF CANCER
Chicago
New York
Philadelphia
Boston
St. Louis
New Orleans
Washington
Baltimore
Pittsburg
Cleveland
Detroit
Buffalo
Milwaukee
Cincinnati

FIG. 138.

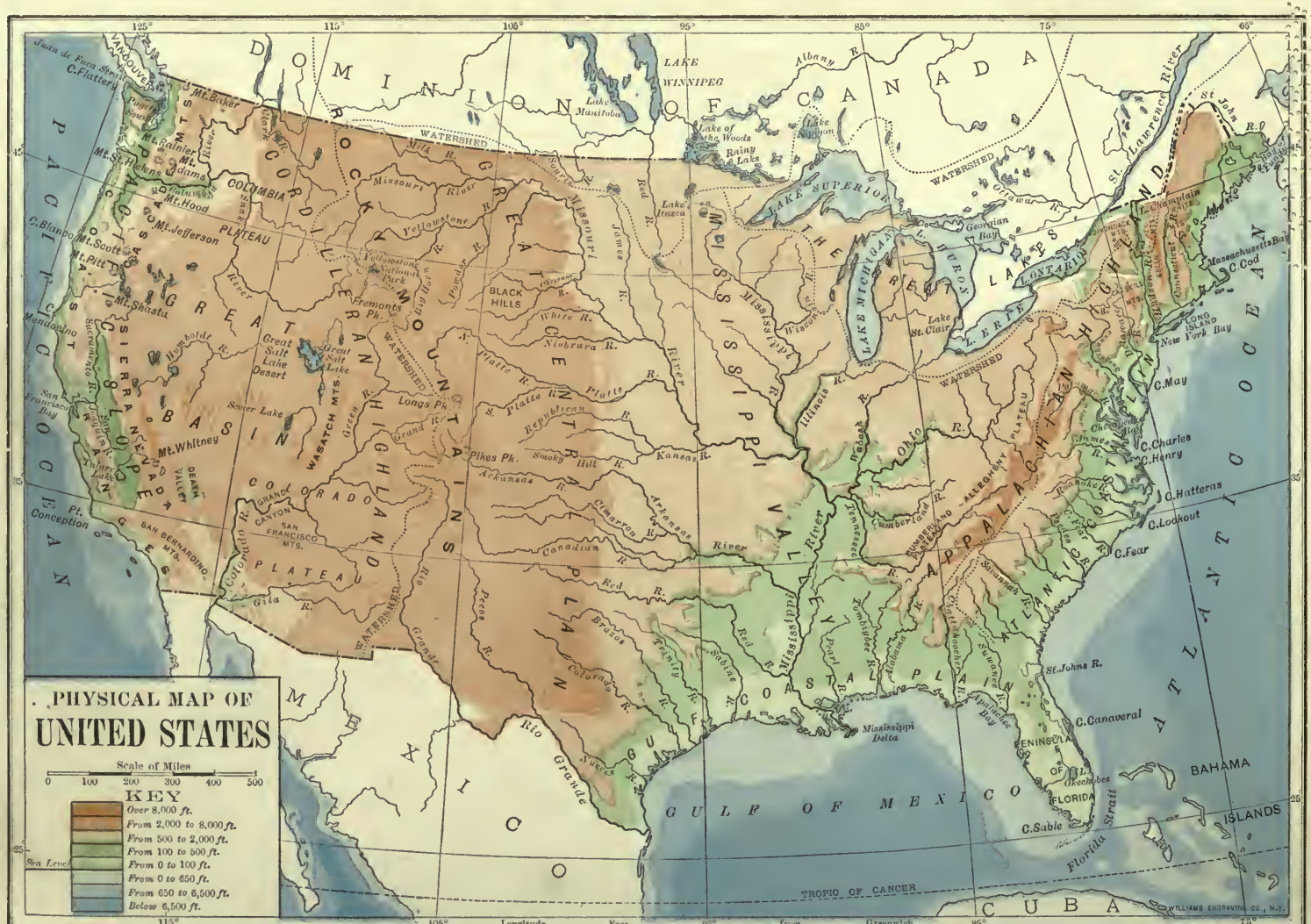
PHYSICAL MAP OF
UNITED STATES
Scale of Miles
0 100 200 300 400 500
KEY
Over 8,000 ft.
From 2,000 to 8,000 ft.
From 500 to 2,000 ft.
From 100 to 500 ft.
From 0 to 100 ft.
From 0 to 650 ft.
From 650 to 6,500 ft.
Below 6,500 ft.
Sea Level
DOMINION OF CANADA
PACIFIC OCEAN
ATLANTIC OCEAN
GULF OF MEXICO
MEXICO
CUBA
BAHAMA ISLANDS
COLUMBIA PLATEAU
ROCKY MOUNTAINS
GREAT BASIN
SIERRA NEVADA
COLORADO PLATEAU
GREAT PLAINS
CENTRAL HIGHLANDS
MISSISSIPPI VALLEY
APPALACHIAN MOUNTAINS
ATLANTIC COASTAL PLAIN
GULF COASTAL PLAIN
LAKE WINNIPEG
LAKE SUPERIOR
LAKE MICHIGAN
LAKE HURON
LAKE ERIE
LAKE ONTARIO
WATERSHED
TROPIC OF CANCER
Longitude West from Greenwich
WILLIAMS ENGRAVING CO., N.Y.

Fig. 139.—Relief map of the United States.

FIG. 141.—Distribution of population in the United States in 1790.

ware, Maryland, Virginia, North Carolina, South Carolina, and Georgia. Find each of these states on the map, Figure 138. How many of them do not border on the ocean? What a small part of the United States they now form!

Our flag still has its thirteen red and white stripes, to remind us of these thirteen original states. At first there were only thirteen stars in the blue field of the flag. But a star has been added for each new state, until now there are many more. Count the stars in the flag to see how many states there are now.

In Figure 141 observe how little of the country east of the Mississippi River was settled by white people in 1790. Note the principal cities at that time. Explain the meaning of the star.

boundary to the mouth of the Rio Grande. Find the width of our country in an east-west direction, from New York to San Francisco. The United States contains about 3,000,000 square miles, and is not quite so large as Canada. How does it compare with Mexico in size?

As we have seen, the states that formed our Union after the War of Independence were thirteen in number. These were New Hampshire, Massachusetts, Connecticut, Rhode Island, New York, New Jersey, Pennsylvania, Delaware, Maryland, Virginia, North Carolina, South Carolina, and Georgia.

Steps in the growth of the United States

1. The thirteen original states

2. States of the Mississippi Valley

To form the many new states, several great sections of land have been added, at different times, to the original thirteen states (Fig. 142).

At the close of the War of Independ-

FIG. 142.—Map to show when and how the United States obtained its territory.

ence, all the land east of the Mississippi River belonged to the Union, except Florida and a narrow strip along the coast west of Florida. For many years, however, the part between the Appalachian Mountains and the Mississippi River was not made into states. Indeed, it was a wilderness, about which very little was known, because the Appalachian Mountains were like a great wall, shutting people out of the Mississippi Valley.

Trappers and traders first forced their way into this valley. Among these were David Crockett and Daniel Boone, who had many thrilling adventures with the Indians, some of which you may have read about. Then, when it was learned what an attractive region this was, settlers rapidly followed, and states were soon formed. Name some of these states.

Pioneers quickly pushed across the Mississippi River, over the *Great Plains*, as far as the Rocky Mountains. Nearly all the vast region between the Mississippi River and the Rocky Mountains, except Texas, was bought from France in the year 1803. Name some of the states that have been formed from it.

Florida, together with a narrow strip of land along the Gulf of Mexico, was bought from Spain in 1819. Texas, which had once been a part of Mexico, obtained its independence from that country; and later it entered the Union.

3. Florida and Texas

The highlands of western United States are much broader and more difficult to cross than the Appalachian Mountains, and for a long time few men were daring enough to try to reach the Pacific coast. When rich gold deposits were discovered near the west coast, however, many thousands started in haste for that region. Partly by purchase, and partly by war with Mexico, our country had already obtained possession of this western land; and, as it became rapidly settled, states were formed from it. Name some of them.

4. States west of the Rocky Mountains

At the close of the War of Independence, in 1783, there were only about three million white persons living in the United States. Now we have over ninety millions, or more than are found in all the other countries of North and South America together. Our country has more inhabitants than France, or Germany, or any European nation except Russia. It should be remembered, too, that those countries are very old, and had been settled for centuries when America was

Our growth in population

FIG. 143.—Density of population in North America at the present time.

discovered. Dating the birth of our nation from 1776, how old is it? Observe how thickly the United States is now settled, as shown in Figure 143.

One reason for this rapid growth in population is the fact that our country is situated in the *temperate zone*. The great heat in the torrid zone makes it difficult to work and unhealthful to live there. On the other hand, the extreme cold of the frigid zone makes it difficult to get a living, no matter how hard one works. In the temperate zone, we find neither of these drawbacks. There is not too much heat for comfort or health, and yet there is plenty for the growth of plants.

Reasons for this growth

1. Our temperature

Our country is so large that there may be much difference in temperature between one part and another. In southern Florida, there is never any frost or snow, and such crops as bananas and pineapples can be grown, as in the torrid zone. Cotton, sugar cane, rice, and oranges, which require a warm climate, are cultivated in our Southern States. Farther north we can produce the more hardy crops, such as wheat and oats, that thrive in a cooler climate. There are few countries that have such variety of temperature as ours.

Over a large part of the United States there is plenty of rain for farming and gardening. In several of the Western States, however, there is so little rain that no crops can be grown without irrigation. In fact, some parts of the West are true deserts, with farming only on the oases, as in the Sahara. In spite of their dryness, large portions of these sections are useful for grazing; and the western part of the United States is one of the most important regions in the world for raising sheep and cattle. Thus the differences in rainfall, as well as in temperature, help to give us a variety of products.

2. Our rainfall

Fertile soil, as well as heat and rain, is necessary in order that people may have food, clothing, and shelter. Few countries in the world have as much deep, rich soil as our own. There are many kinds, too, so that many kinds of crops can be raised.

3. Our soil

On the whole, the climate and soil of our country are so favorable, and so varied, that the United States produces almost all the crops necessary for food, clothing, and shelter.

The mineral products, from the rocks beneath the soil, are also of great value. In our western mountains are gold, silver, lead, and copper mines of untold richness. Enormous amounts of copper and iron ore are mined in the states that border Lake Superior. Coal, too, is abundant in many of our states, so that there is plenty of fuel for manufacturing these various metals into useful articles. In addition, we have valuable building stone of many kinds, and clays, salt, and other useful mineral products. Indeed, the rich supply of minerals found in the United States is one of the chief reasons for our remarkable growth as a nation.

4. Our minerals

It is of great advantage that we have so many different kinds of land in our country. There are the *coastal plains*, that lie between the Appalachian Mountains and the sea. Here the land is so level and fertile that farming is easy. Far larger than these are the *central plains*, through which the Mississippi River and its tributaries flow. This level country

5. Our plains and mountains

makes one of the finest farming sections in the world. There are also many smaller plains, and much gently rolling and hilly land suited to agriculture.

The higher hills, mountains, and plateaus are valuable in a different way. They cause the moisture in the air to be condensed into rain and snow, which keep the rivers filled with water. In addition, they are the source of valuable minerals, and they are often covered with forests, which supply us with the lumber that we need for so many purposes.

6. Our conveniences for transportation

The minerals and other raw products have to be transported from the mines to the factories, and then the manufactured articles must be distributed far and wide over the country. It is important, therefore, that there be abundant means for shipping goods.

The railroads now do much to supply this need, but our natural highways, or waterways, have met it well from the beginning. First of all, note (Fig. 134) how the Mississippi River and its tributaries make it possible for boats to reach the ocean even from the heart of the country. Trace some of the larger of these rivers, and write their names.

The Great Lakes on the north are other important waterways on which vessels may travel for many hundreds of miles. How many such lakes are there? There are also many smaller rivers and lakes of importance for transportation. Can you name some of them, and point them out on the map?

It is necessary to send some goods to foreign lands, and to bring others from foreign countries to our shores. Here again the United States is fortunate. One of our coasts faces Europe, and is well supplied with excellent harbors. Trace this coast line, to see how irregular it is, thus making fine harbors possible.

Our Southern coast, too, has some excellent harbors, from which ships can easily sail to Europe, the West Indies, Mexico, and the countries of South America. Vessels can also go from port to port along our coast, carrying goods from one place to another.

Our Western coast faces Asia, where there are enormous numbers of Chinese, Japanese, and other people. This coast likewise has some excellent harbors, from which steamship lines now run to many ports on the Pacific and Indian oceans.

No other country has so favorable a situation for trade with all parts of the world as ours. In fact, no other large country has a seacoast, with an abundance of good harbors, on both the Atlantic and Pacific oceans.

There have been still other powerful attractions that have drawn foreigners to our country. One of these has been the free land. Any one who has cared to come here and live for a few years could obtain a good-sized farm to live upon. That has been a help indeed to many a man. So many people have been attracted to this country from other lands, that almost all the free farm land has now been taken up.

7. Our free land

Even where there was no land to be given away, it has often been possible to buy it at a very low price, — only a few dollars an acre, — which even a poor man, with energy, could hope to pay. Millions of our people have come

to the United States, attracted by the free or cheap farm lands.

In some countries of Europe many of the people are still very ignorant. In the United States, on the other hand, an effort is made to give every one an education. One of the first things our forefathers did was to establish schools, and now there are schools, colleges, and universities throughout all the land. Most of this education is free, and any one can obtain it. Our excellent system of education is one of the chief causes of our rapid advance, for educated people can do things which ignorant people cannot do.

8. Our free education

Another great attraction to many persons has been our free government. In some countries the rulers do not let the people share in the making of laws. They seize private property; they arrest men and throw them into prison, or drive them from the country, or put them to death, without trial.

9. Our free government

After the War of Independence, our forefathers established a government called a *democracy*. In this, the people elect some men to make laws, and others to execute them. That is the kind of government we still have. All the officers are really *servants* of the people, and not masters; and most of them are paid by the people for their work. The object of the government is to help every one, as far as possible, and not to worry or oppress any one.

Millions of men have died fighting against a despotic form of government; and it is no wonder that other millions have braved great hardships to reach a land where they were free from it. There is, perhaps, no country on the earth where an honest man, with ability and energy, can prosper more easily than in the United States.

These are some of the more important reasons why our population has increased so rapidly. Aside from the people who have been born in this country, millions have come from Europe and Asia; and they still come in almost every ship that carries passengers. Such people are called *immigrants*, and most of them land at New York.

Immigrants to the United States

From that city they scatter in all directions, and settle in every part of the country. These immigrants have greatly helped to develop our nation, and to make the United States one of the great powers of the world. They have been eager to come here, and most of them have been eager to stay, for they have learned to love this land. You probably know some immigrants yourself, for they are all about you. Ask some of them why they came here, and whether this country is as good to live in as the one they left.

Our country is so large that it is necessary to divide it into sections, in order to study it in proper detail. Accordingly, the states have been grouped into four sections, of which the first is the Northeastern Group. The others, in their order, are the Southern States, the Central States, and the Western States.

Reason for studying the United States in sections

As you study each of these sections, a very important point to notice is the *scale* upon which each map is drawn. For example, in Figure 144, an inch represents about seventy-five miles. According to that scale, how long is the state of Connecticut?

Importance of watching the scale of maps

Find what the scale is on the map,

Figure 138. Using that scale, find the distance from New York to Buffalo. From Philadelphia to Boston, by way of New York. When studying a map, whether in this book, on the wall, or in an atlas, it is always important to observe its scale first.

Review Questions

1. What is the size of the United States? How does it compare in size with other countries? 2. Name the first thirteen states of our Union, and locate them. 3. What great sections of land have been added to these, to make the number of states that we now have? 4. Tell about our growth in population. 5. Show that our temperature is one reason for so great a population. 6. How is our rainfall a second reason, and our soil a third? 7. How are our minerals a fourth reason? 8. Show that our plains and mountains are a fifth reason. 9. How have our conveniences for transportation helped our growth? 10. How has our free land helped? 11. Our free education? 12. Our free government? 13. Tell about the immigrants to the United States. 14. Why is it important to watch the scale of any map used?

Suggestions

1. Read the life of Daniel Boone or David Crockett. 2. Find out what steps a man has had to take, in order to get possession of free land in this country. 3. Learn what is done with the immigrants when they land at Ellis Island in New York Harbor. 4. Do you see any dangers to this country in allowing all people to come here from other countries who desire to come?

2. The Northeastern States

Map study

1. Name these states. Write the names. 2. Which has no seacoast? 3. Which state extends farthest east and north? Which farthest south? Which farthest west? 4. What natural boundaries do you find between them? 5. Which of them border on Canada? On the Atlantic Ocean? 6. What two large lakes form part of the boundary on the West? 7. What mountain system crosses these states? 8. Which states are most mountainous? 9. Name and trace the course of the chief rivers. 10. What do you observe about the direction in which the principal rivers flow? 11. Name and locate three lakes; three bays; three capes and three islands. 12. To which state does Long Island belong? 13. Find New York City. Using the scale, about how far is it from New York City to Boston? To Philadelphia? 14. Walk toward New York City. 15. In what direction would one have to sail from New England, in order to reach England?

The area of these states

Of the nine states in this group the six farthest northeast are called *New England*. What are their names? What are the names of the other three? On the map of the United States (Fig. 138) you can see what a small part of our country these states make. All of them together are much smaller than Texas, yet they form nearly one fifth of our whole number of states.

Which is the smallest of these states? It is the smallest state in the Union. One of the New England States is about as large as the other five together. Which one is it? Even this, however, is much smaller than New York, the largest of the Northeastern States.

Character of their surface

A large part of the surface of these states is hilly or mountainous. Near the coast the hills are low, and much of New Jersey is a plain; but the land rises gradually toward the interior until the mountains are reached. West of the mountains, in New York and Pennsylvania, the country is a low, hilly plateau with some plains, especially along the shores of lakes Erie and Ontario.

The mountains have different names. In Pennsylvania are the Appalachian Mountains which extend southward into the Southern States. North of the

Fig. 145.—The New England States.


NORTHEASTERN STATES
(WESTERN SECTION)
Scale of Miles
0 25 50 75 100 125 150
Cities with over 1,000,000 NEW YORK
Cities with 500,000 to 1,000,000 Pittsburg
Cities with 100,000 to 500,000 Rochester
Cities with 25,000 to 100,000 Auburn
Smaller places Oswego
Capitals with less than 25,000 DOVER
National Capitals
State Capitals
Other Cities
Longitude West from Greenwich
QUEBEC
CANADA
ONTARIO
GEORGIAN BAY
LAKE ONTARIO
LAKE ERIE
Lake Simcoe
Ottawa R.
Ottawa River
St. Lawrence
Ottawa
Montreal
Toronto
Hamilton
Barrie
Stratford
Brantford
Kingston
Prescott
Ogdensburg
Malone
Lake Champlain
Plattsburg
Burlington
ADIRONDACK MTS.
Mt. Marcy
THOUSAND ISLANDS
Watertown
Oswego
Fulton
Oneida Lake
Rome
Utica
Herkimer
Ilion
Little Falls
Mohawk R.
Amsterdam
Gloversville
Johnstown
Saratoga Springs
Glens Falls
Hudson Falls
Schenectady
Watervliet
Albany
Troy
Rensselaer
Hoosick Falls
Niagara Falls
N. Tonawanda
Tonawanda
Lockport
ERIE CANAL
Albion
Rochester
Batavia
Buffalo
Lackawanna
Canandaigua
Newark
Seneca Falls
Geneva
Seneca L.
Cayuga L.
Auburn
Syracuse
Oneida
Cortland
Ithaca
Keuka Lake
Hornell
Norwich
Oneonta
Dunkirk
Fredonia
Chautauqua Lake
Jamestown
Salamanca
Olean
Corning
Elmira
Owego
Binghamton
CATSKILL MTS.
Catskill
Hudson
Kingston
Poughkeepsie
Newburgh
Middletown
Port Jervis
Pittsfield
Erie
Corry
Warren
Bradford
Meadville
Sharon
S. Sharon
Youngstown
Newcastle
Oil City
Emporium
Blossburg
Dubois
Clearfield
Williamsport
Carbondale
Scranton
Pittston
Wilkes-Barre
Plymouth
Nanticoke
Hazleton
Sunbury
Shenandoah
Shamokin
Pottsville
Easton
Bethlehem
Allentown
S. Bethlehem
Butler
Beaver Falls
Pittsburg
McKeesport
Braddock
Homestead
Duquesne
Carnegie
McKees Rocks
Washington
Greensburg
Monessen
Connellsville
Uniontown
Altoona
Johnstown
Harrisburg
Carlisle
Steelton
Lebanon
Reading
Pottstown
Norristown
Lancaster
Columbia
Phoenixville
York
Chambersburg
Gettysburg
Coatesville
W. Chester
Chester
Wilmington
PENNSYLVANIA
APPALACHIAN MTS.
ALLEGHENY MTS.
Susquehanna R.
Juniata R.
Allegheny R.
Delaware R.
Schuylkill R.
Paterson
Hoboken
Passaic
Jersey City
E. Orange
Newark
Elizabeth
Phillipsburg
Dover
Perth Amboy
New Brunswick
Red Bank
Trenton
Lakewood
Long Branch
Asbury Park
PHILADELPHIA
Camden
Hammonton
Bridgeton
Millville
Barnegat
Atlantic City
Cape May
NEW JERSEY
NEW YORK
Yonkers
Mt. Vernon
New Rochelle
LONG ISLAND
Stamford
Bridgeport
New Haven
Danbury
CONN.
MASS.
VERMONT
ATLANTIC OCEAN
Delaware Bay
Chesapeake Bay
Baltimore
Washington
ANNAPOLIS
DOVER
DEL.
MARYLAND
VIRGINIA
WEST VIRGINIA
OHIO
Wheeling
Cumberland
Grafton
Clarksburg
Buckhannon
Williams Engraving Co., N. Y.

FIG. 144.

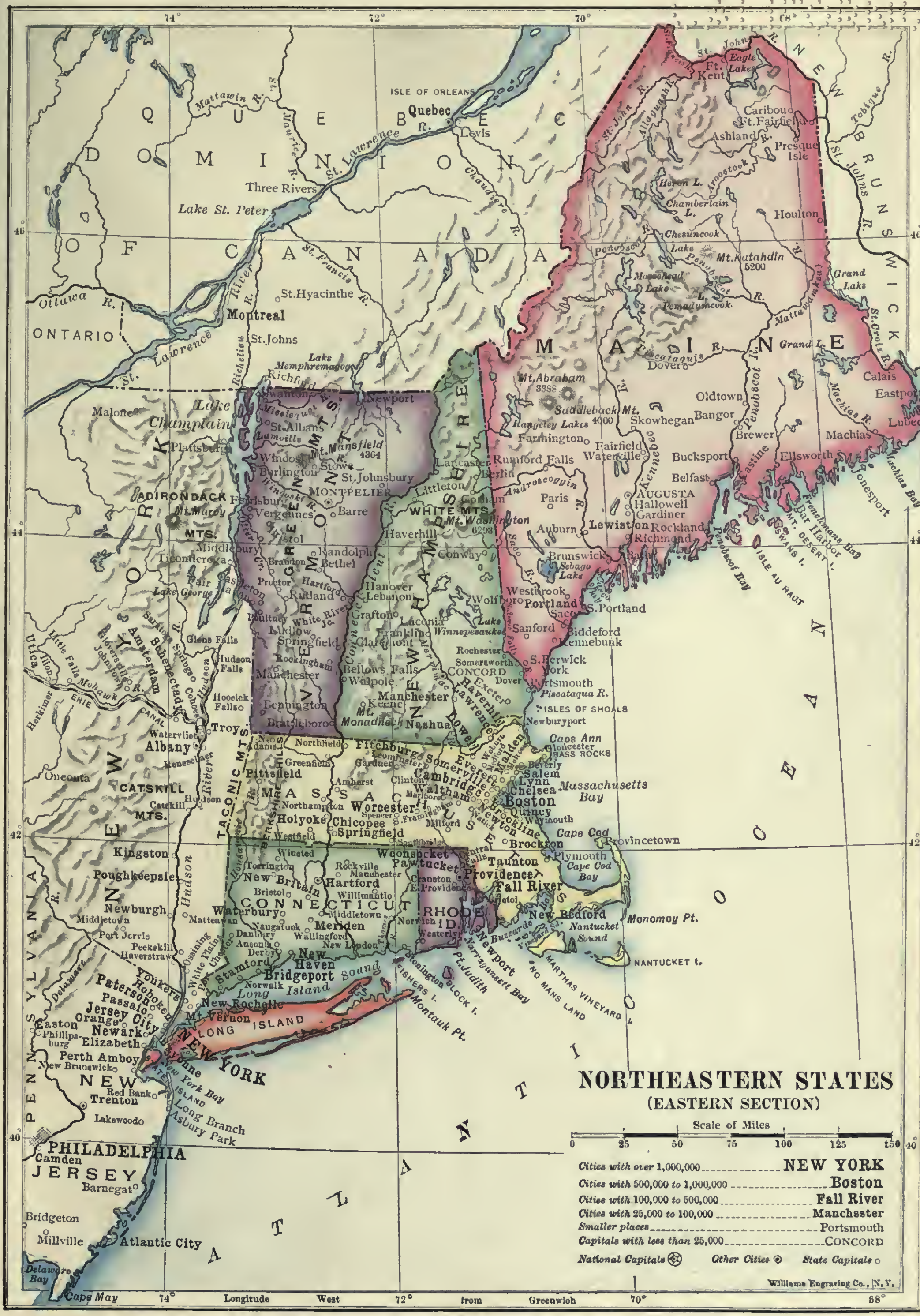
NORTHEASTERN STATES
(EASTERN SECTION)
Scale of Miles
0 25 50 75 100 125 150
Cities with over 1,000,000 NEW YORK
Cities with 500,000 to 1,000,000 Boston
Cities with 100,000 to 500,000 Fall River
Cities with 25,000 to 100,000 Manchester
Smaller places Portsmouth
Capitals with less than 25,000 CONCORD
National Capitals
Other Cities
State Capitals
Williams Engraving Co., N.Y.
Longitude West from Greenwich
74° 72° 70° 68°
46 44 42 40
DOMINION OF CANADA
QUEBEC
ONTARIO
NEW BRUNSWICK
MAINE
NEW HAMPSHIRE
VERMONT
MASSACHUSETTS
CONNECTICUT
RHODE ID.
NEW YORK
NEW JERSEY
PENNSYLVANIA
ATLANTIC OCEAN
Quebec
Levis
ISLE OF ORLEANS
St. Lawrence R.
Three Rivers
Lake St. Peter
St.Hyacinthe
Montreal
St.Johns
Ottawa R.
Chaudière R.
St. Francis R.
St. Maurice R.
Mattawin R.
Richelieu R.
Lake Memphremagog
Fort Kent
Eagle Lake
Caribou
Ft.Fairfield
Ashland
Presque Isle
Houlton
Heron L.
Chamberlain L.
Chesuncook
Mt.Katahdin 5200
Moosehead Lake
Pemadumcook L.
Grand Lakes
Grand L.
Calais
Eastport
Lubec
Machias
Ellsworth
Jonesport
Machias Bay
Frenchmans Bay
Bar Harbor
MT. DESERT I.
SWANS I.
ISLE AU HAUT
Penobscot Bay
Castine
Brewer
Bangor
Oldtown
Dover
Skowhegan
Fairfield
Waterville
Bucksport
Belfast
AUGUSTA
Hallowell
Gardiner
Rockland
Richmond
Lewiston
Auburn
Paris
Rumford Falls
Farmington
Mt.Abraham 3388
Saddleback Mt. 4000
Rangeley Lakes
Brunswick
Sebago Lake
Westbrook
Portland
S.Portland
Saco
Biddeford
Kennebunk
Sanford
S. Berwick
York
Portsmouth
Piscataqua R.
ISLES OF SHOALS
Newburyport
Kennebec R.
Androscoggin R.
Penobscot R.
St. Croix R.
St. Johns R.
Tobique R.
Aroostook R.
Allagash R.
Berlin
Gorham
Lancaster
Littleton
WHITE MTS.
Mt.Washington 6293
Haverhill
Conway
Wolfboro
Lake Winnepesaukee
Laconia
Franklin
Claremont
Hanover
Lebanon
Grafton
Rochester
Somersworth
CONCORD
Dover
Exeter
Manchester
Keene
Mt. Monadnock
Nashua
Walpole
Bellows Falls
Newport
Swanton
St.Albans
Lamoille R.
Winooski R.
Burlington
Mt.Mansfield 4364
Stowe
St.Johnsbury
MONTPELIER
Barre
Vergennes
Middlebury
Bristol
Randolph
Bethel
Brandon
Proctor
Rutland
Hartford
White River Jc.
Poultney
Ludlow
Springfield
Rockingham
Manchester
Bennington
Brattleboro
GREEN MTS.
Connecticut R.
Lake Champlain
Plattsburg
Malone
ADIRONDACK MTS.
Mt.Marcy
Ticonderoga
Lake George
Glens Falls
Hudson Falls
Saratoga Springs
Schenectady
Amsterdam
Gloversville
Johnstown
Little Falls
Utica
Herkimer
Mohawk R.
ERIE CANAL
Cohoes
Troy
Hoosick Falls
Watervliet
Albany
Rensselaer
Oneonta
CATSKILL MTS.
Catskill
Hudson
Kingston
Poughkeepsie
Newburgh
Middletown
Port Jervis
Matteawan
Peekskill
Haverstraw
Ossining
White Plains
Yonkers
Mt. Vernon
New Rochelle
Hoboken
Jersey City
Paterson
Passaic
Orange
Newark
Elizabeth
Easton
Phillipsburg
Perth Amboy
New Brunswick
Red Bank
Trenton
Lakewood
Long Branch
Asbury Park
New York Bay
STATEN ISLAND
PHILADELPHIA
Camden
Barnegat
Bridgeton
Millville
Atlantic City
Cape May
Delaware Bay
Delaware R.
LONG ISLAND
Long Island Sound
Montauk Pt.
FISHERS I.
BLOCK I.
Pt.Judith
North Adams
Northfield
Greenfield
Fitchburg
Gardner
Leominster
Clinton
Pittsfield
TACONIC MTS.
BERKSHIRE HILLS
Amherst
Northampton
Holyoke
Chicopee
Springfield
Westfield
Worcester
Spencer
Southbridge
Marlboro
Framingham
Milford
Natick
Waltham
Cambridge
Somerville
Everett
Malden
Lowell
Lawrence
Haverhill
Cape Ann
Gloucester
BASS ROCKS
Beverly
Salem
Lynn
Chelsea
Boston
Massachusetts Bay
Brookline
Newton
Quincy
Weymouth
Brockton
Taunton
Plymouth
Cape Cod
Cape Cod Bay
Provincetown
Fall River
New Bedford
Buzzards Bay
Vineyard Sd.
Nantucket Sound
NANTUCKET I.
Monomoy Pt.
MARTHAS VINEYARD
NO MANS LAND
Woonsocket
Pawtucket
Central Falls
Providence
Cranston
E.Providence
Bristol
Newport
Narragansett Bay
Westerly
Stonington
Norwich
New London
Thames R.
Willimantic
Rockville
Manchester
Hartford
New Britain
Bristol
Torrington
Winsted
Waterbury
Naugatuck
Meriden
Middletown
Wallingford
New Haven
Danbury
Ansonia
Derby
Bridgeport
Norwalk
Stamford
Port Chester
Housatonic R.

FIG. 144.

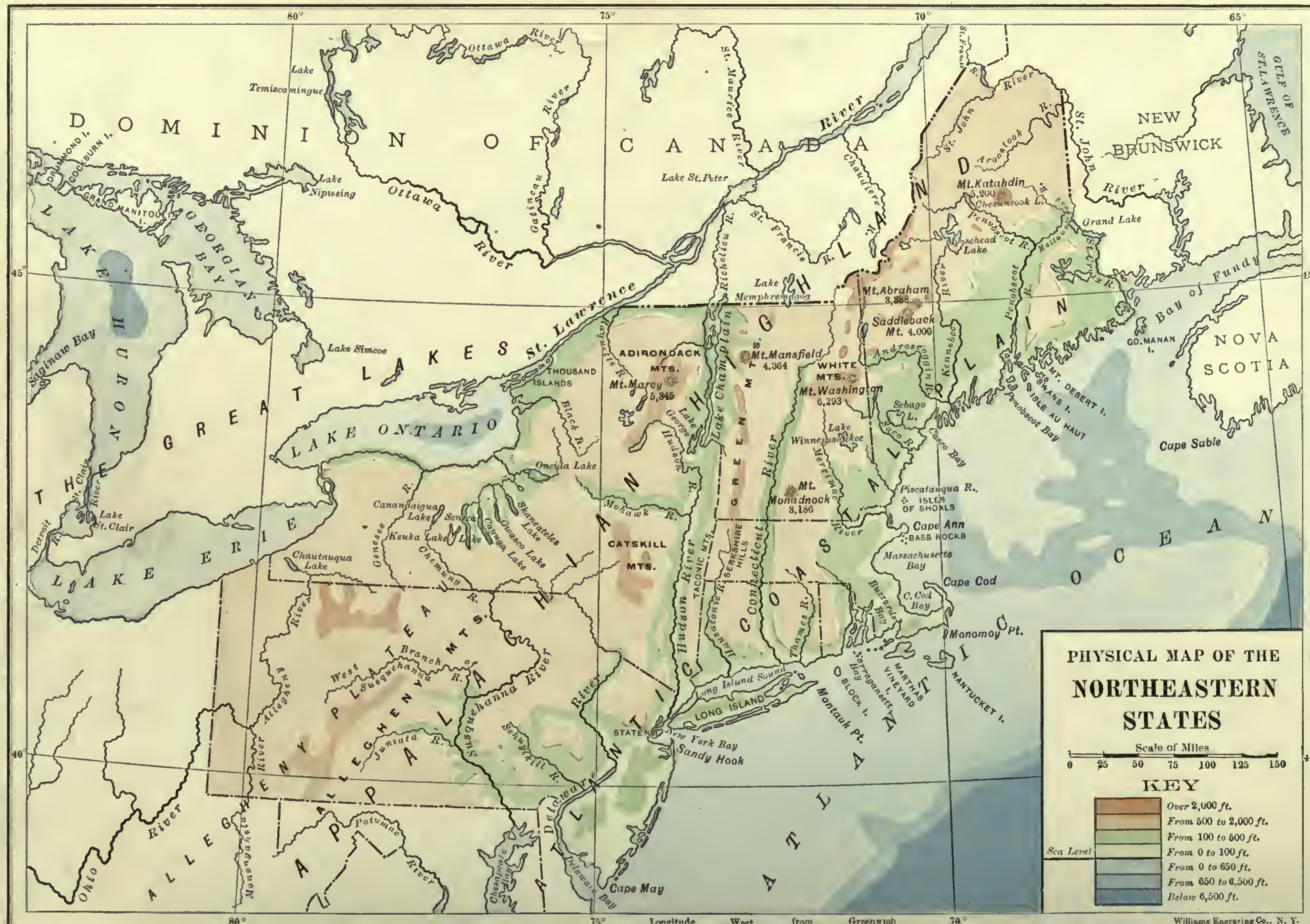
PHYSICAL MAP OF THE
NORTHEASTERN
STATES
Scale of Miles
0 25 50 75 100 125 150
KEY
Over 2,000 ft.
From 500 to 2,000 ft.
From 100 to 500 ft.
From 0 to 100 ft.
Sea Level
From 0 to 650 ft.
From 650 to 6,500 ft.
Below 6,500 ft.
DOMINION OF CANADA
NEW BRUNSWICK
NOVA SCOTIA
GULF OF ST. LAWRENCE
Bay of Fundy
THE GREAT LAKES
LAKE HURON
GEORGIAN BAY
LAKE ONTARIO
LAKE ERIE
NEW ENGLAND
ATLANTIC OCEAN
ADIRONDACK MTS.
Mt. Marcy 5,345
CATSKILL MTS.
GREEN MTS.
Mt. Mansfield 4,364
WHITE MTS.
Mt. Washington 6,293
Mt. Katahdin 5,200
Mt. Abraham 3,388
Saddleback Mt. 4,000
Mt. Monadnock 3,186
Cape Cod
Cape Ann
Cape May
Sandy Hook
LONG ISLAND
Long Island Sound
New York Bay
Cape Sable
Longitude West from Greenwich
Williams Engraving Co., N. Y.

Fig. 146. — Relief map of Middle Atlantic States.

FIG. 148. — A view of the White Mountains of New Hampshire.

Appalachian Mountains are the Catskill and Adirondack Mountains in New York.

Find the Green Mountains and the White Mountains in New England. Mount Washington in the White Mountains is the highest peak in all these States, being a little over a mile high.

FIG. 149. — A view of Niagara Falls.

In this hilly and mountainous land there are many lakes, as you can see by the map; and many waterfalls, the largest being Niagara Falls, the grandest waterfall in the world. Much of the surface is very rough and rocky, with bold cliffs and the soil strewn with stones.

The coast of this entire section is very irregular, with many capes, peninsulas, bays, sounds, and harbors. This irregularity of coast line is due to the fact that the land has been lowered, and the ocean has entered the valleys forming bays and harbors, while the higher parts have remained above the sea as

Character of the coast, with reason

capes and peninsulas. This sinking of the land has therefore been very important, for it has made safe places where ships can load and unload. It has made possible such large and busy seaports as Boston, New York, and Philadelphia.

The northern part of the Northeastern States has a bold, rocky coast, with much grand scenery. But the coast of New Jersey is low and sandy, with fine sand beaches, where the bathing is excellent.

into the Atlantic Ocean (Fig. 414). East of New England it is much farther from land than the Labrador current.

The prevailing winds blow from the west; but every few days, the direction of the wind changes to the east or south, and the air then comes from the ocean, often bringing rain. The winds that blow from the east and northeast are cool in summer and very chilly in winter, because they are cooled in

Photograph supplied by Pennsylvania Railroad.

FIG. 150. — Bathing on Cape May Beach, New Jersey.

The climate

1. In the North

Northern Maine lies so far north that it has a severe climate; but it is made even more severe by the influence of a cold ocean current which flows along the northern coast.

This is called the Labrador current, because it flows past the Labrador coast. It is a slowly moving stream of ocean water, many miles wide, that begins in the Arctic Ocean and flows southward along the coast of Nova Scotia and New England as far as Cape Cod.

On the other hand, there is a current of warm water that makes the southern portion of New England warmer than it would otherwise be. This current, called the Gulf Stream, comes from the Gulf of Mexico and flows northeast, out passing over the Labrador current. They often cause heavy snows in winter, and rain and fog in summer. Those winds that blow from the south, on the other hand, are warmed in passing over the Gulf Stream. Largely for that reason, the southern part of New England is much warmer than the northern part, and has little snow in winter.

The climate of most of New York and Pennsylvania is much like that of New England; but the New Jersey coast has a much warmer climate, for here the effect of the warm Gulf Stream is felt. For this reason Atlantic City, for instance, has such mild weather that many people go there to escape the cold of winter and early spring.

2. In the South

In spite of their small area and rugged surface, the Northeastern States contain over twenty-one million inhabitants, or nearly one fourth of the people in the United States. One of them, New York, has more inhabitants than any other state in the Union. It contains also the largest city in the New World. Pennsylvania is next to New York in population and in size.

Population of these states

It is interesting to learn why so many people have crowded together in this small section. What special kinds of work can have attracted them here?

Why so great a population

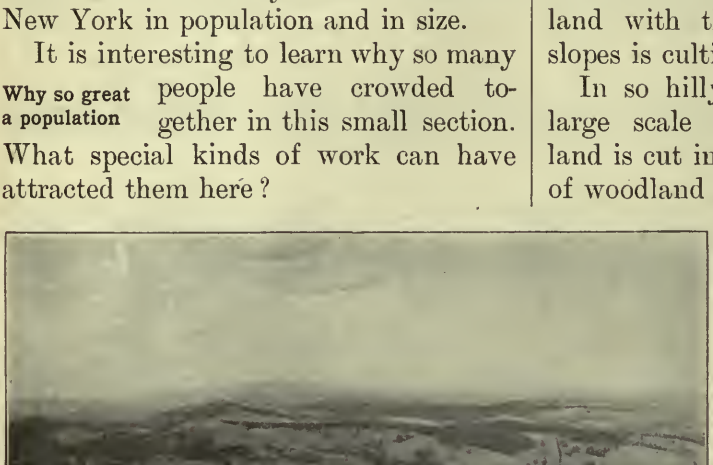

FIG. 151. — A view in the hilly region of New England, dotted with patches of woodland and of land cleared for farming.

The principal occupations are the same as those found elsewhere; namely, agriculture, lumbering, fishing, mining, manufacturing, and commerce. Some of these occupations, however, have become far more important than others, and we shall now find out which these are.

Agriculture, the most important occupation in the world, is not so important in these states as in many other places. One reason for this is that there is so much mountainous land (Figs. 145 and 146 Name the states that contain mountain

Agriculture
1. Not especially prominent

Even in sections where there are n mountains, the country is often so hill and rocky that much of the land cann profitably be farmed. The slopes a too steep, or the soil is too thin an stony. There are so many people livin in these states, however, that even muc land with thin, stony soil and stee slopes is cultivated.

In so hilly a country farming on large scale is seldom possible. Th land is cut into small fields with patch of woodland here and there (Fig. 151)

Among the most com mon products are suc fruits and vegetables as find a ready market in the neighborin cities. This kind of farm ing is known as *truc farming;* for the man things that are raise such as tomatoes, onion beans, peas, sweet cor berries, apples, and ra ishes are called *truc* These products are eate fresh in great quantitie But the dense population of these stat calls for enormous quantities of canne fruits and vegetables, also; and man gardeners and farmers raise crops main for canning.

2. Why sma farms, often used for truck farming

Much poultry including ducks, chick ens, turkeys, and geese are raised for food. Eggs, therefore, are a very important product.

3. Why muc dairying and raising of animals

One of the chief farming industries *dairying*. The many inhabitants of th

FIG. 152.—A herd of dairy cows grazing in the pasture. Their milk is sent to the cities.

section require great quantities of milk, butter, and cheese; and even where other crops will not flourish, the land produces grass. Wherever one travels through these states, he is likely to see beautiful pastures and fine cattle. While butter and cheese are made in every state in the Union, this work is especially important in New York.

The number of cows in a dairy herd varies from a dozen to several score. In summer they are allowed to graze in the pastures, but during the winter they are kept in large barns, where hay and grain are fed to them. Twice each day they are milked, and the milk may be sent to a neighboring city to be sold, or it may be made into butter and cheese.

UTICA, on the Mohawk River, is an important cheese market; and small cheese and butter factories, or *creameries*, are scattered over New York. They are common in other states, also. These creameries furnish a ready market for milk, and are therefore of great value to the farmers near by. So much milk is needed in the large cities that special arrangements are made for supplying it. Special cars, and even whole trains, carrying nothing but cans of milk, are run to these cities from far out in the country.

Besides dairy products, the cattle furnish meat for food and hides for leather. In addition to cattle many hogs, horses, and sheep are raised, the sheep furnishing meat, wool, and skins.

4. Some of the most fertile sections, and their products

There are many sections in which the farm land is of the very best quality. This is true, for instance, of the Connecticut Valley, in which much grain and tobacco are raised. Trace the Connecticut River. It is true, again, of the southern half of New Jersey and of eastern Pennsylvania. Here the climate is so mild that such crops as grapes and peaches are raised. Apples, grapes, and other fruits also thrive on the fine farm land of western New York, especially near Lakes Erie and Ontario. Here the water of the lakes warms the air in the fall and winter, so that there is less danger from frosts than in other regions.

FIG. 153.—Grapes on a vine in a vineyard in western New York

There is so much fruit raising in New York that the *nursery* business, or that of raising young trees, vines, and bushes to sell, is a flourishing industry. One of the principal centers for this business is ROCHESTER.

Among the most important crops of the Northeastern States are potatoes, hay, and the grains, such as wheat, oats, corn, barley, rye, and buckwheat. Far more land is used for these crops than for those already mentioned. However, since the states farther west are even more noted for hay and grain, a description of this kind of farming will be given when these states are studied (pp. 177–179).

Other farm products

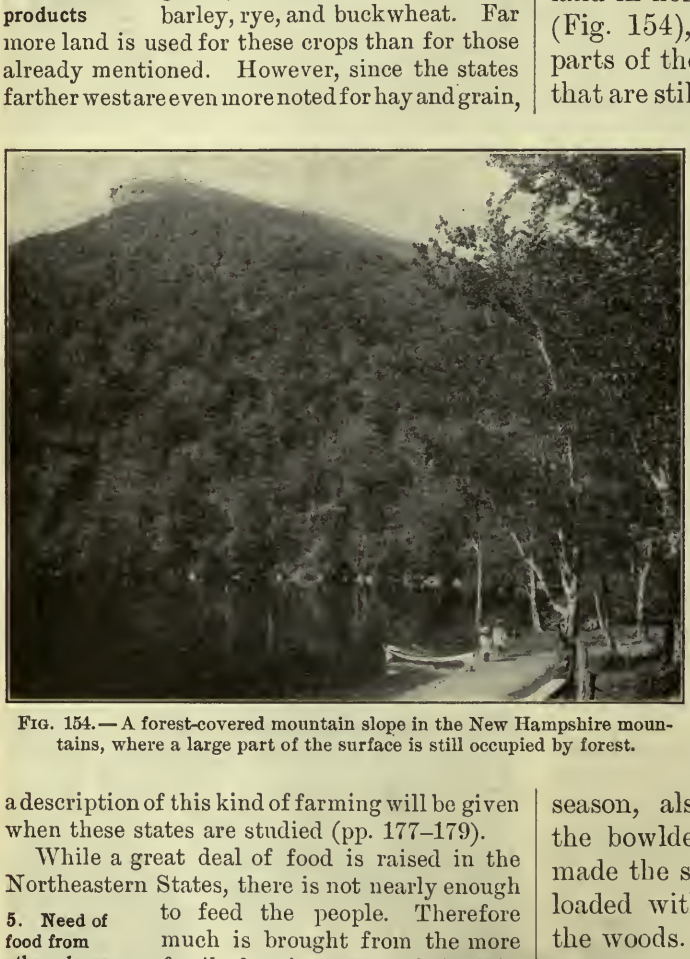

FIG. 154. — A forest-covered mountain slope in the New Hampshire mountains, where a large part of the surface is still occupied by forest.

While a great deal of food is raised in the Northeastern States, there is not nearly enough to feed the people. Therefore much is brought from the more fertile farming states of the Mississippi Valley. Wheat for bread is shipped to the Northeastern States in great quantities; so are meat, sugar, and other common foods.

5. Need of food from other places

In the days of the early settlers, most of this region was covered with forests, and one of the first products sent bac to England was lumber. Now th woods have been cleared away from much of the land, but where it is too steep or rocky for farming, large forest still remain.

Lumbering
1. Extent of the forests

For instance, there are large tracts o land in northern Maine, New Hampshir (Fig. 154), and Vermont, as well as i parts of the three states south of ther that are still covered with timber. Stand ing on the summit of Mou Katahdin, one sees only vast wilderness of trees i all directions. The neare cultivated land is twent five miles to the east, whi the unbroken forest stretch much farther away to th north and west. The Ad rondack Mountains, and th Appalachian Mountains i New York and Pennsy vania are also heavil wooded.

Winter is the busie season for cutting timber i these forests, for the swamps, which are numerous, a then frozen over. At tha season, also, the snows have covere the bowlders and fallen trees, and hav made the surface level enough for sled loaded with logs, to be drawn throug the woods.

2. Cutting the timber

The industry of lumbering is very im portant, and many men are employed i it. Usually fifty men or more are nece sary to a logging camp. With axes i hand, they go through the woods cho ping down all the trees that are large an

sound enough for good lumber. The limbs are then chopped off, and the logs are dragged by horses to the banks of the nearest stream (Fig. 155).

FIG. 155. — Lumbermen at work in winter, drawing the logs on sleds to the edge of the stream.

3. Floating the logs to the mills

When the snow melts in the spring, the cutting is over and another busy season begins. The ice on the rivers breaks up, the streams are swollen by the melting snows, and the logs are whirled off downstream in the swift current. Frequently, however, even this flood of water is not sufficient to carry them. In such cases, in order to provide more water, dams are placed across the streams, or at the outlet of lakes. When more water is needed, the dams are opened, and a flood is poured into the stream. In this way immense numbers of logs are floated or "driven" downstream, forming what the lumbermen call a "log drive."

The work of driving the logs is a very exciting one. The logs often run on to rocks and shoals; and, as soon as one log gets caught, others are held back by it. If the "jam" is not speedily removed, the entire stream may become blocked. Such a condition is called a *log jam* (Fig. 156). It is the business of the log drivers to prevent jams by freeing the logs that become thus lodged.

FIG. 156. — A log jam in a stream in which the logs are being floated from the forest. The lumbermen are at work trying to start the logs moving again.

Some of the logs are stopped near waterfalls, far upstream, where they are sawed into boards, laths, shingles, etc.; but most of them are carried to sawmills as far down the river as the current will take them.

During the season for cutting, the men go forth early in the morning and work until late in

the evening, eating and sleeping in log cabins (Fig. 157). Their beds are broad shelves of rough boards, covered with boughs from the spruce and balsam trees; and the camp is often so small that they must lie side by side, with scarcely room to turn. There is much exposure, too. The men may suffer from the cold, for it is often necessary to work when the temperature is far below zero.

4. Hardships of the lumberman's life

The work of preventing log jams brings even more exposure, and danger as well, for the workmen must frequently wade into the icy water and ride upon the logs. One may often see a man carried along on a single log, clinging to it by means of sharp spikes in his boots, and balancing himself with a long pole. Now and then he must jump from log to log, as a squirrel springs from tree to tree. The men so employed are often wet from head to foot, and may even be thrown into the water and drowned.

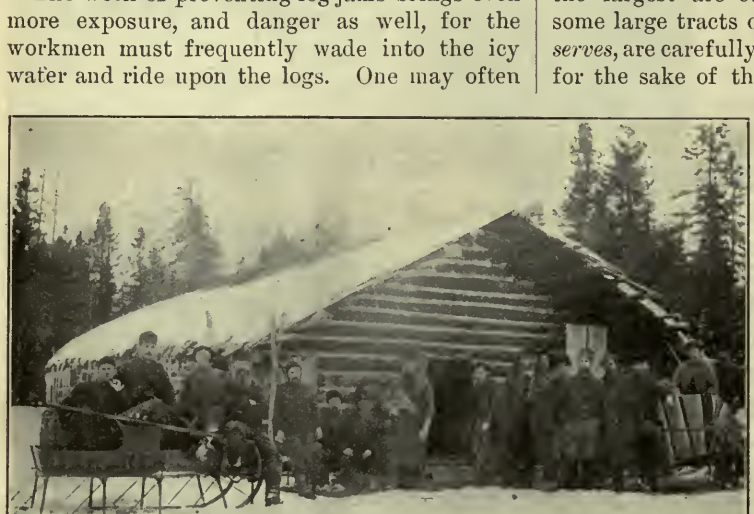

FIG. 157.—Lumbermen and their log cabin in the woods of Maine.

The forests of these states supply much lumber, though far less than formerly. Make a list of articles manufactured out of wood. Forests have another important use: they prevent the rain water from running rapidly off from the land. Where forests have been carelessly destroyed by the lumbermen, or by fire, the streams rise rapidly after every rain and then quickly decrease in size. Often there is not enough water to run the factories that use the water power.

5. Value of the forest

For these reasons there are *forest reservations* in several of these states in which it is forbidden to cut down the trees, or where only a few of the largest are cut each year. Besides this, some large tracts of woodland, called *game preserves*, are carefully protected by certain citizens for the sake of the fishing and hunting at the proper season. State laws also protect the game.

Fishing

Fishing is another occupation of much importance, though it employs few men. Along the eastern coast are found cod, halibut, mackerel, herring, shad, bluefish, clams, oysters, and other food fish. At the time of the early settlements, food fish were abundant close by the rocky New England shore, but so many have been caught along the coast, that they are now far less common.

1. Kinds of fish

To-day, in order to catch large quantities of cod, halibut, and mackerel, it is necessary to go far from land, and hundreds of vessels, and thousands of men, are engaged solely in catching fish. GLOUCESTER, in Massachusetts, is the most noted fishing port in the United States; but BOSTON, PORTLAND, and PROVINCETOWN also have an important fish trade. Locate each of these cities.

2. Centers of the fishing industry

3. Mackerel

Most of the mackerel are caught in spring and summer. They swim together, on the surface of the ocean, in such numbers, or *schools*, as fishermen say, that they may be easily seen from a distance. The fishermen who cruise about in search of the mackerel, sail in swift, two-masted vessels, called *schooners* (Fig. 158). When they see a "school," they spring into their great seine boats, row over to the fish, drop a large net, or *seine*, into the water, and draw it around the "school." Then the seine is drawn in, forming a pocket and trapping the fish. In this pocket enough fish are sometimes caught to fill hundreds of barrels. Some of the fish are taken to port to be sold fresh, but most are salted. This method of fishing is similar to that which the Disciples of Jesus used in the Sea of Galilee.

FIG. 158. — A Gloucester fishing schooner, just leaving port on a fishing trip.

Halibut and cod cannot be caught

FIG. 159. — Fishermen drawing up a trawl on the Fishing Banks of Newfoundland. The long line, with shorter ones hanging from it, with hooks on their ends, is lowered to the bottom. After a while it is drawn up and the fish that are on the hooks are taken into the boat.

with a seine, for instead of swimming at the surface, these fish live in deep sea water. They are caught in winter as well as in summer, mainly on the Fishing Banks that lie off the coasts of New England and Newfoundland.

4. Halibut and codfish

(1) *Where caught*

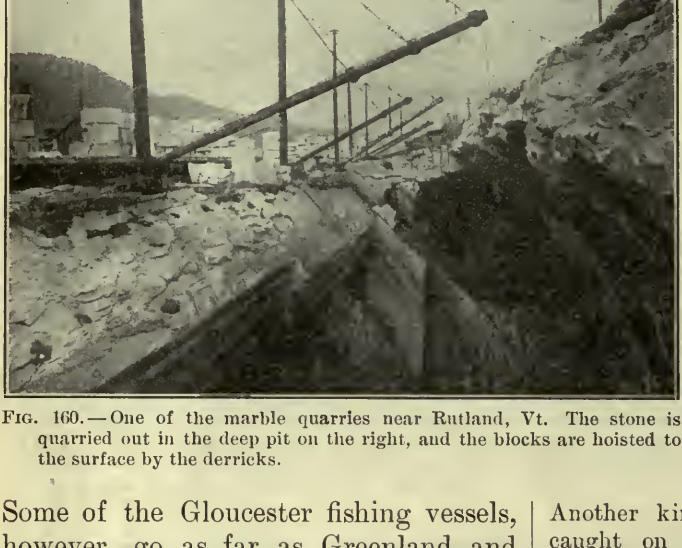

FIG. 160.—One of the marble quarries near Rutland, Vt. The stone is quarried out in the deep pit on the right, and the blocks are hoisted to the surface by the derricks.

Some of the Gloucester fishing vessels, however, go as far as Greenland and Iceland for halibut and codfish.

Halibut are very large, some weighing more than a man, and they are often caught upon single lines. Codfish may be caught in the same manner, though a *trawl* (Fig. 159) is more commonly used for cod than for halibut. The trawl consists of a number of hooks hanging from a single long line, all lowered into the water together and left there for hours. The fish swallow the bait on the hooks, and in this way many are caught at one time.

(2) *Method of catching*

This kind of fishing is dangerous, because the men must venture out in small, flat-bottomed boats, called *dories*, to take the fish off the trawls. While they are busy fishing, a storm may arise, or a heavy fog come up, and prevent their return to the vessel. They are then left in open boats far out upon the ocean. Every year dozens of Gloucester fishermen are lost in this manner.

(3) *Danger of such fishing*

Codfish are sold either fresh or salt; but most of the halibut are sold fresh, though some are smoked. In order to salt, or *cure*, the codfish, they are split open and cleaned, soaked in barrels of brine, and then dried upon the wharf. Very often the bones are removed, the skin stripped off, and the flesh torn into shreds and packed into boxes as boneless cod. Either the salted or boneless cod may be seen in almost any grocery, and much of it comes from Gloucester.

(4) *Method of marketing*

Traps, or *weirs*, also, are set for fish. They are placed along the shore, and many kinds of fish such as shad, salmon, and bass swim into them and are then unable to find their way out.

Another kind of fish that is caught on the New England coast is the herring, which is smoked and canned in large quantities at EASTPORT, Me.

5. Other ocean foods

Lobster fishing also is carried on, especially on the coast of Maine. A lobster trap, made of wood and weighted with stone, is lowered to the bottom of the sea, where the lobster lives, crawling around among the rocks and seaweed. A fish-head for bait is inside the trap, and the lobster crawls in to get it; but he is so stupid that he is rarely able to find his way out.

Clams are found along many parts of the New England coast. Some of them live buried in the mud flats which are exposed to view at low tide. At such times boys and men dig these shellfish out, much as a farmer digs potatoes. Another kind of shellfish on the New England coast is the *scallop;* and still another is the *oyster*, which thrives in the shallow water of the bays south of Cape Cod.

Quarrying and mining in these states employ a great number of men. Note how many kinds of mineral products are found here.

Quarrying and mining.

More than half the granite used in the entire country is obtained from the Northeastern States. The greatest quantity comes from Maine, Massachusetts, and Vermont. One of the oldest stone quarries in the country is at QUINCY, near Boston. There are other quarries in and near GLOUCESTER, Mass.; BARRE, Vt.; CONCORD, N.H.; and at several points along the coast of Maine.

1. Stones and clay

Marble is found in several places, especially near RUTLAND, Vt. Here are quarries of fine *white marble* that is much used for monuments.

Slate, used for roofs of houses, for writing slates, and for other purposes, is found in several of these states, especially in Pennsylvania and Vermont. There is much *sandstone* that is good for building; there is *clay*, for making bricks, drainpipes, flowerpots, and tiles; and there is limestone for the manufacture of lime and of *Portland cement*. Pennsylvania leads all our states in the value of its building stone.

Salt is another very important product of this region. Since this is the one mineral that *everybody* must have, it was fortunate for the early settlers that salt springs were found in central New York. To these springs the wild animals and the Indians had long been in the habit of going for the salt they needed. The white men found the salt springs so valuable that the production of salt soon became an important industry at that point, and it caused the beginning of the city of SYRACUSE.

The salt water of these springs flowed from a great bed of salt that lies underground, beneath a large part of central New York. By boring down through the soil and some layers of rock, the salt bed itself can be reached. Many such borings have been made, and much salt is now obtained through them. New York produces more salt than any other state.

FIG. 161. — A view in the oil fields of western Pennsylvania. Each of these small towers, or derricks, stands over an oil well. The derricks were used in boring the wells.

Two fuels, oil and natural gas, are found in western New York and Pennsylvania. *Petroleum*, as the oil is generally called, means "rock oil," — a name which suggests its origin.

3. Petroleum and natural gas

The oil and gas have been formed by the decay of remains of animals and plants that lived ages ago when the ocean covered this

region. As they died and fell to the bottom of the sea they were buried beneath sand and clay which have now become hard rock. The oil and gas, which came from the decay of the animals and plants,

(1) *How formed*

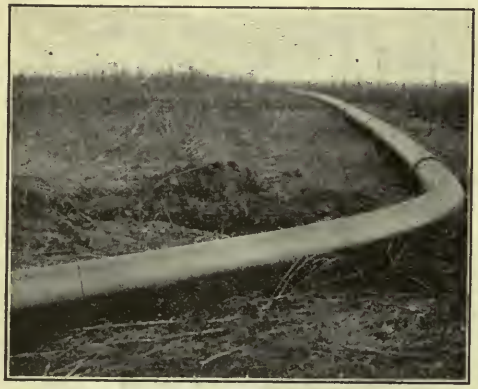

FIG. 162. — A large pipe through which petroleum is flowing from the oil wells to the refinery.

entered the crevices between the grains of the sandstones and other rocks. Thus these substances were stored deep down in the earth. Oil resembling petroleum is now manufactured from fish; and gas similar to that now found in the rocks often rises from swampy places, where plants are decaying.

When a hole is bored down to a rock layer where gas is thus stored, the gas rushes to the surface. It is then led away in pipes, often to distant places. Thousands of homes in BUFFALO, PITTSBURG, and other cities are heated with natural gas; and in many factories, too, the gas is used for fuel.

(2) *How obtained from underground*

Borings in which petroleum rises are called *oil wells*. From these the oil sometimes spurts, or gushes out; but it must often be pumped out. Near the oil wells cities have grown up, such as BRADFORD and OIL CITY in Pennsylvania, and OLEAN in New York.

After being taken from the earth, the petroleum is stored in large tanks, and then refined. In its natural state it is a thick, dark yellow or reddish fluid, but in the refinery it is changed so that a large part of it becomes clear, colorless *kerosene oil*.

(3) *Products from the oil*

Benzine, naphtha, and gasoline also are made from petroleum. The thick substances that are left, after the refining, are used in making dyes of various kinds, machine oil, vaseline, and paraffin. The latter is used in many ways; for example, in making chewing gum and candles.

The oil business is mainly in the hands of the Standard Oil Company. From the wells the oil is led to the refineries in pipes (Fig. 162), sometimes hundreds of miles long. This company owns many special tank cars for hauling the kerosene, as well as steamers for shipping it to foreign lands. Watch for one of the tank cars, and describe it.

(4) *Principal company handling oil*

The pioneers knew nothing about either of these substances. For lighting in the early days they used either candles or lamps in which some animal oil, such as whale oil, was burned. Very likely, even your great-grandfather, when he was a boy, did not know what kerosene oil was.

FIG. 163. — Trunks of trees, in the solid rock, standing where they grew when these rocks were being deposited as sediment in the Coal Period.

Another fuel, far more important than either of these, is coal, which is found in great abundance in Pennsylvania.

4. Coal

There is good proof that the coal used in our stoves and furnaces has been

made from plants. Roots of plants may still be seen in the old soil, now changed to rock, that lies beneath the coal beds; and stems of plants, and even trunks of trees (Fig. 163) changed to coal are found in the coal beds. Besides, with a microscope, or at times even with the naked eye, one can see that coal is made of bits of plants pressed closely together. Sometimes the full form of a fern or leaf, called a *fossil*, may be seen (Fig. 164).

(1) *How coal has been formed*

The plants of which the coal is made grew many ages ago in great swamps. When they died, they fell into water, making thick beds of plant remains, like those that are forming in swamps to-day. If it could then have been dug up and dried, it would have made good fuel. Indeed, in Ireland, Norway, and other cool, moist lands, it is now the custom to dig such woody matter out of the swamps and dry it for burning (Fig. 469). Such fuel, called *peat*, is much used for cooking and heating in those countries.

These ancient swamps were later covered up by layers of sand, clay, and other substances, now hardened into rock. The plant remains themselves have also been changed by pressure until they have become a kind of rock, or mineral coal. Some of the poorer coals, known as *lignite*, are little more than peat beds partly changed to coal.

(2) *The kinds of coal*

Other beds, having had far more pressure upon them, have been changed to harder coal. One of them is called soft, or *bituminous*, coal. Another, called *anthracite*, has had even greater pressure. It has been so greatly changed that it is as hard as some rocks, and is known as *hard coal*.

About half the coal of the United States comes from Pennsylvania. This state, also, produces both kinds of coal, being one of the very few regions in the world where anthracite is found in abundance. WILKESBARRE and SCRANTON, in eastern Pennsylvania, owe their importance largely to the anthracite mined near them. Great quantities of soft, or bituminous, coal are mined about PITTSBURG. Pennsylvania is the only one of the Northeastern States that has important coal fields.

(3) *The amount and kinds of coal in Pennsylvania*

FIG. 164. — The print of a fern in a rock that was formed during the Coal Period.

In some places the coal is found close to the surface, while in many others it is several hundred feet beneath the surface. Where the coal lies far down in the earth, deep *shafts* must be sunk to reach it. From the sides of such a shaft, *tunnels* (Fig. 165) are dug into the coal beds, and from these the coal is removed. Some of the coal beds are only two or three feet thick, but others are several times as thick as this.

(4) *Method of mining*

FIG. 165. — A drawing to illustrate how coal is mined. There is a shaft going straight down, then tunnels extend off from it into the different coal beds.

Usually there are several beds of coal, with thick layers of rock between, and the shaft extends downward through them all, with tunnels reaching out into each bed (Fig. 165). In a large mine one may travel through miles and miles of tunnels. Since it is very dark so far underground, the tunnels are sometimes lighted by electricity; but the workmen often furnish their own light by means of lamps fastened to their caps.

The miners drill holes in the coal beds with drills run by steam or compressed air (Fig. 166), and break the coal out by blasting. The larger lumps are then broken up with picks. After this is done, the coal is placed in cars drawn to the shaft by mules, or by electricity, and then hoisted to the surface. The mules are kept underground for months, being fed and allowed to sleep in stables cut out of solid coal.

Soft coal is sold in the form in which it reaches the surface, but anthracite must first be sorted into different piles, each containing lumps of a single size. This work is done in great buildings, called *coal breakers*, which stand close by the mouth of the shafts. The coal is hoisted to the top of the breaker, where the larger lumps are broken up. It then passes down through the building and is separated into different sizes by means of sieves and various kinds of machinery.

(5) *How anthracite coal is prepared for market*

FIG. 166. — Miners working far underground in a bituminous coal mine near Pittsburg. The machine in front is drilling a hole in the thick coal seam that forms the wall on the right.

There is much rock mixed with the coal, and this must be picked out. Some of this work is done by machinery; but much of it is done by boys, called *breaker boys*, who sit on low wooden benches, as the coal passes by, watching carefully for pieces of rock. These they pick out and throw away. You can imagine how black the boys become before their day's work is done.

(6) *Uses of coal*

Both the hard and the soft coal are used not only for heating houses and for cooking, but also in making steam to use in running locomotives, steamboats, and the machinery of factories. Much coal is used also in smelting iron and other metals, and in the manufacture of gas for lighting. Coal is, indeed, the most useful of all minerals. Without it our country could not have prospered as it has.

FIG. 167. — Coke ovens near Pittsburg. Each of the small doors leads to an oven where the coal is burned and changed to coke.

5. Iron ore

(1) *Where found, and why important*

Iron ore is mined in large quantities in Pennsylvania, and also in New Jersey and New York. Thus both the raw material and the fuel for manufacturing it into useful articles are found almost side by side. Both coal and iron are easily sent to all the cities of these states for use in the factories. This is very important, since iron is the most useful of all metals.

(2) *Its appearance; also how formed and mined*

In appearance, iron ore is sometimes a hard, black mineral; sometimes a soft, loose, yellowish or reddish brown earth. It is not *iron* at all, any more than *wheat* is flour; it is only *iron ore*, a mineral out of which, by much work, iron may be made.

Like coal, the iron ore in the earth was prepared long ago, though in a very different manner, as follows: Small quantities of iron exist in many minerals and rocks. Indeed, the red and yellow colors of soils, and of some rocks, are due to it. As water slowly works its way through the soil and rocks, it dissolves the iron, much as it would dissolve salt or sugar if those substances were there. Where the conditions have been favorable, the water has brought quantities of the iron to one point, and there deposited it. This has formed beds, or *veins*, of iron ore, and it is these that are now being mined.

Some of these articles are made partly or wholly of other metals than iron, such as copper, gold, and silver.

Worcester, west of Boston, manufactures wire and other iron goods. New Haven is noted for hardware and firearms. Carriages, sewing machines, and other articles are made at Bridgeport. Firearms, cars, and bicycles are made at Springfield, and at Hartford, which is situated at the head of steamboat navigation on the Connecticut River. Fitchburg is also engaged in metal manufacturing.

Near Boston, at Waltham, the American Watch Company has an immense factory (Fig. 171), where 3100 watches are made every day. About 4300 persons, more than half of whom are women, are employed in this factory, receiving about $200,000 a month in wages. Great numbers of clocks and watches are made in Waterbury, and much cutlery at Meriden, Conn. Some of the cities where cotton and woolen goods are manufactured, such as Fall River, Lowell, and New Bedford, also manufacture goods of iron and other metals.

Manufactories making four other articles from mineral products are especially worthy of note in these states. One of these articles is *glass*, which is made at and near Pittsburg, where natural gas furnishes cheap fuel. Pittsburg is the greatest center in the country for the manufacture of plate glass.

3. Manufacture of glass, pottery, brick, and cement

(1) *Glass*

Clay suited to the manufacture of *pottery* is found in a number of places; but much clay for pottery is imported. A high grade of pottery is made at Trenton, N.J., where this industry has become very important.

(2) *Pottery and bricks*

So many *bricks* are used for building, that brickyards are found in the neighborhood of nearly all cities. Bricks are made of clay. This is first pressed into the brick shape when damp, then dried, and finally baked. In this process some of the grains melt, so that when cooled again, they cling together like stone. The clays near Philadelphia, and the great clay beds of the Hudson Valley, above New York City, supply an abun-

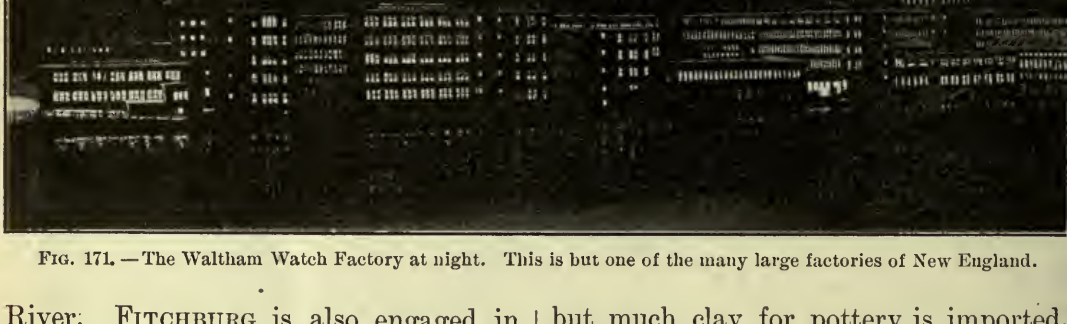

Fig. 171. — The Waltham Watch Factory at night. This is but one of the many large factories of New England.

dance of brick for these and neighboring cities.

(3) *Cement*

Portland *cement* has become of great importance within the last few years. It is made in many places, especially in New Jersey, Pennsylvania, and New York. To make it, limestone is ground fine and mixed with coal dust. The two are then placed in a furnace, where the burning coal dust gives out so much heat that the limestone melts. It comes out of the furnace as a kind of clinker, which is then ground into fine powder. This cement has the valuable property of becoming hard like rock, or *setting*, when water is added. It is used for sidewalks, for buildings, dams, bridges, and many other purposes, taking the place of wood, stone, and iron.

4. Textile manufacturing

(1) *Extent and variety of cotton and woolen manufacturing*

There are about 400 cotton mills in New England alone, making such articles as sheets, towels, stockings, underwear, thread, string, handkerchiefs, and gingham and calico dress goods. As many as 1200 persons may be employed in a single mill, perhaps three quarters of the number being women. One of these mills may use from 60,000 to 70,000 pounds of cotton per day.

(2) *Method of cotton manufacture*

Most of the cotton used grows in our warm Southern States. It is sent to the factories in bales, each weighing about 500 pounds, and is made into cloth in the following manner: First, the dirt, small sticks, and other foreign matter are removed. Then the cotton fibers, of various lengths, are combed out straight and well mixed with one another. After that they are pressed into thin, gauze-like sheets. These are gradually drawn out and twisted into threads, and then wound upon spindles and taken to the *looms* for weaving. All this work is done by machinery. The cotton cloth is made by machinery which weaves the threads together. In an ordinary piece of calico there may be as many as 1200 threads, side by side, and others crossing them. Stripes and other patterns are made by coloring the threads differently, and then, before the weaving begins, carefully arranging them according to some design.

The manufacture of woolen goods is another very important industry in New England.

(3) *Method of wool manufacture*

After being sheared from the sheep, the wool is washed and freed from burs, sticks, and dirt. It is then untangled and combed out straight, after which it is twisted into yarn, much as cotton is twisted into thread. The yarn is woven into cloth for men's suits and overcoats, and also for cloaks, skirts, underwear, blankets, stockings, carpets, and dozens of other articles. Most, if not all, of the garments that you are wearing are made either of wool or of cotton, or of the two mixed together.

(4) *Chief cities engaged in textile manufacture*

The following cities are engaged extensively in the manufacture of either cotton or woolen cloth, or both; in Maine, BIDDEFORD, LEWISTON, AUBURN, and AUGUSTA; in New Hampshire, MANCHESTER, NASHUA, and DOVER; in Massachusetts, LOWELL and LAWRENCE on the Merrimac River; PITTSFIELD in western Massachusetts, and FALL RIVER, NEW BEDFORD, and TAUNTON in the southern part; in Rhode Island, PAWTUCKET, WOONSOCKET, and PROVIDENCE which is the second city in size in New England. One of the largest cotton factories in the world is at MANCHESTER, N.H.

In New York, New Jersey, and Pennsylvania there is also much manufacture of cotton and woolen goods. For in-

stance, YONKERS in New York is noted for its manufacture of carpets and hats; NEW YORK CITY and PHILADELPHIA for clothing; PHILADELPHIA for carpets; TROY for collars and cuffs; UTICA for cotton goods; and JAMESTOWN for plush goods. Locate each of these cities on the map.

Boot and shoe making is carried on in a number of cities, though the most important are LYNN, HAVERHILL, and BROCKTON in Massachusetts, and BINGHAMTON and ROCHESTER in New York. Locate these cities. Besides boots and shoes, leather

5. Leather manufacturing

(1) *Cities engaged in it, and articles made*

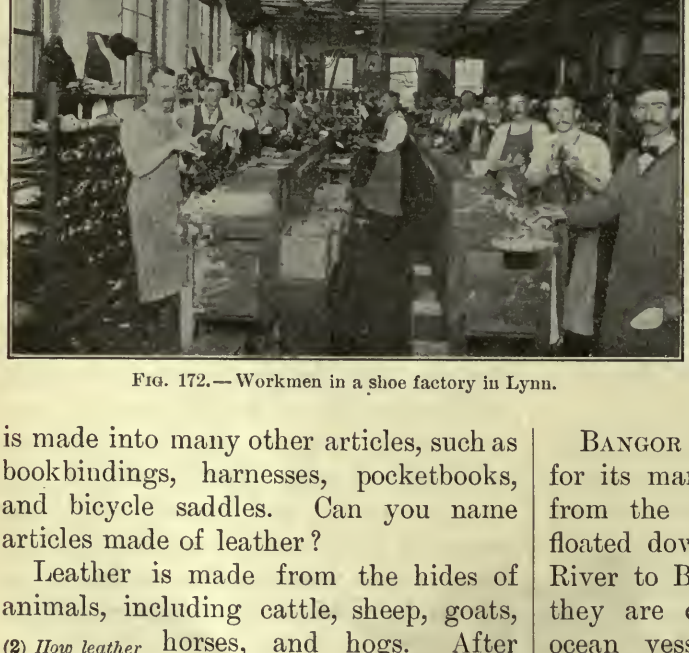

FIG. 172.—Workmen in a shoe factory in Lynn.

is made into many other articles, such as bookbindings, harnesses, pocketbooks, and bicycle saddles. Can you name articles made of leather?

Leather is made from the hides of animals, including cattle, sheep, goats, horses, and hogs. After the hair is removed, the hides are taken to *tanneries*, where they are soaked in tannic acid to make them wear well.

(2) *How leather is prepared*

Some of the tanneries are situated near fo ests, where there are many hemlock or oa trees whose bark produces the tannic aci Others, like those in and about SALEM, Mass are far away from the forests. To these, bot the hides and the bark must be brought a lon distance. In other tanneries chemicals are use in place of the tannic acid from hemlock or oa bark. In a single tannery near Boston, whe sheepskins are tanned, from 30,000 to 40,00 skins are prepared each week.

After being tanned, the leather is take to the shoe factories (Fig. 172) and cu up, one machine cutting out soles of a certain size, a second tops, a third tongues, etc.; these parts are the sewed or nailed together and the shoes are soo finished. As in the cas of cotton and woolen manu facturing, nearly all th work is done by machinery each person caring for on or more machines, and pe forming the same simpl task day after day.

(3) *How boots and shoes are made*

Every city in these state is engaged in the manufacture of lumber, or of other materials fo building, or for furniture.

6. Manufactures from the forests

BANGOR in Maine is especially note for its manufacture of lumber. Log from the forest are easily floated down the Penobscot River to Bangor; and here they are cut up into lumber, whic ocean vessels carry to other point The same is true of PORTLAND. On th wharves of this city are quantities o boards ready to be shipped away, to b made into boxes, barrels, doors, an

(1) *Chief centers for such manufactures*

hundreds of other articles. Waterville, Augusta, and Bath, in Maine; Williamsport, Penn., and Watertown, N.Y., are engaged extensively in manufacturing articles of wood.

Another important use of the forests is in making paper, for much of the paper commonly seen, such as newspaper and wrapping paper, is now made of wood.

(2) *Paper*

Short logs, after having the bark removed, are placed in a steel frame and forced against an enormous grindstone. The *wood pulp* thus ground off is carried away by water, run through a sieve, deposited on a wide belt, and pressed into thin sheets between rollers. When dry, it is paper. Wood pulp is made also by the use of chemicals. We do not often think, when reading the news or wrapping a package, that the paper in our hands may once have been part of a live tree, perhaps in the woods of Maine.

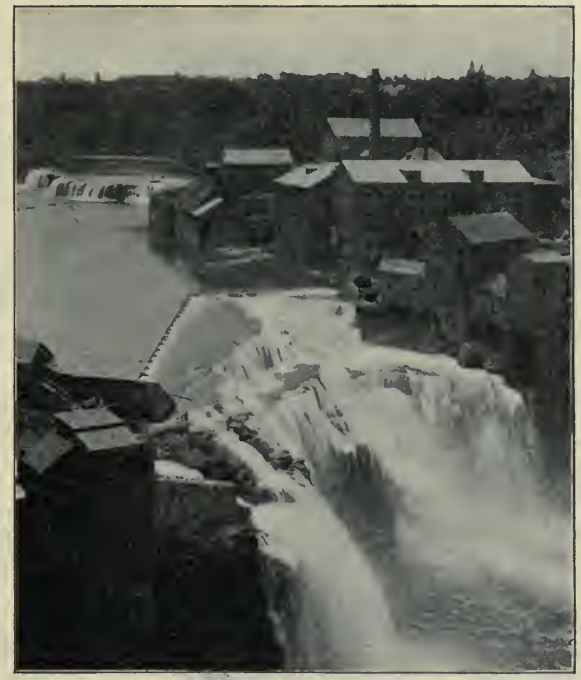

Fig. 173. — Falls in the Genesee River at Rochester, used for power in the flour mills and other factories at Rochester.

Paper mills are found at Bangor, Waterville, and a number of smaller places in Maine; and at Watertown and other points in New York. However, Holyoke, the greatest paper-making city in New England, is situated not in the forest region, but in the midst of busy cities in Massachusetts. There the pulp is generally made of rags, which produce a finer grade of paper than wood. The neighboring cities furnish the necessary rags.

The forest trees supply other valuable products besides lumber and wood pulp. One of these is *tannic acid*, used in tanning leather; it is made from the bark of the hemlock and other trees. Another product is maple sirup and maple sugar. Among the trees in the forests of these states is the *sugar maple*. Its sap, unlike that of most trees, is sweet; and if a hole is bored through the bark in early spring, when the sap is moving rapidly through the tree, it will ooze forth as a watery liquid. This is then boiled to drive off some of the water, thus making maple sirup and maple sugar.

(3) *Tannic acid; maple sugar and sirup*

Although these are the principal kinds of manufacturing carried on in the Northeastern States, there are many others that have not been mentioned. For instance, automobiles, farm machinery, wagons, rubber goods, silk goods, chocolate, and many other articles are manufactured in large quantities in these states. One very important industry is grinding grain into flour, which is done in scores of places. Rochester, N.Y., for example, has many flour mills, as well as other factories, run by the water power furnished by the falls of the Genesee River (Fig. 173).

7. Other kinds of manufacturing

8. Great changes in methods of manufacture

(1) *The old way of manufacturing*

The way in which manufacturing is now carried on is very different from the old way. In the olden days, all the wool for cloth, for instance, was obtained from sheep that were raised near by. It was brought to the house, and was first made into yarn by means of a spinning wheel (Fig. 174). Then it was woven into cloth, and this cloth was made into garments by the mother and daughters of the household, during the long winter evenings. This work was done by simple machines run by hand or by foot power. It was then the custom for everybody to wear "homespun," or cloth made at home.

FIG. 174. — An old-fashioned spinning wheel.

Likewise, when the men were not too busy with farm work, they often made shoes for their families. Or some one traveled from house to house, making boots and shoes. Pieces of leather for the uppers were cut from hides of animals raised near by, and sewed together by hand; then the thick soles were tacked on, again by hand. Most kinds of work, indeed, were done by hand.

(2) *The present way*

Now, most of the wool that is used is raised far away, perhaps on the sheep ranches of the Western States, and is brought to the factories in boats, or in freight trains. There it is put into machines and quickly spun into long threads of yarn that are wound upon spools by machinery. This yarn is then woven into cloth, also by machinery.

To-day, also, most of the hides for use in making shoes are brought long distances, often from the cattle ranches of the West. The hides are first tanned at a tannery, and then the leather is cut into proper shapes by machines. After that the pieces are sewed, or nailed, together by machinery.

Everywhere machinery has taken the place of hand work. As now done, the work is carried on, not in the home, but in factories; and hundreds, or even thousands, of persons are often employed in a single factory. All these men and women, and boys and girls, are kept busy from morning till night running the machines. It is an interesting sight to watch the throngs of workers pour out of one of these buildings at the close of the day (Fig. 175).

In former days it took a long time to make a piece of cloth, or a pair of shoes, that can now be made in a few minutes. One of the

most striking changes, though, is in the *kind* of work that each person does; for now one person usually works on only a very small part of the article manufactured. He may spend all of his time, day after day, tending a machine that merely cuts out soles for shoes, or that sews certain pieces of leather together.

(3) *The variety of work*

How different it was when a man plowed ground one day, acted as a carpenter in building a shed on a second day, and made shoes a third! Were former days really worse than the present, or better?

Commerce

1. Why especially important in these states

All this manufacturing calls for great quantities of food, and for an immense amount of raw materials, such as coal, metal, cotton, wool, leather, and lumber. The wants of the twenty-six million inhabitants of the Northeastern States naturally cause extensive trade in such materials and the articles made from them. It is plain, then, that the transportation of goods, as well as buying and selling, must be very important occupations in these states. In addition, there are many millions of persons living west of these states who have goods that they wish to send across the Atlantic Ocean to foreign lands; and the foreign countries, in turn, have goods to send to us. A large portion of this trade is carried on in the seaports of the Northeastern States.

This *foreign commerce* alone keeps thousands of men and women busy all the time, mainly in the large cities on the coast, such as New York, Philadelphia, and Boston.

Good harbors along the coast are among the chief aids to such commerce. Not only must many things be received from foreign countries, and many articles be shipped abroad, but many articles can best be sent from city to city in these states by boat, along the coast.

2. Harbors

If you examine the map, you will see

FIG. 175. — Men and women leaving the factory at the close of the day. Notice how many people there are employed in this one factory.

that this coast is very irregular, with many bays, both large and small. These form excellent harbors along the coast from Maine to Pennsylvania. Draw this coast line, showing the chief bays and capes. Write their names on your drawing.

The rivers also are of great value in such commerce. Name and trace the chief rivers in New England. On the map find the Hudson, the principal river in New York; the Susquehanna, the principal one in Pennsylvania; and the Delaware River.

3. Rivers and canals

Most of these rivers are too shallow for large boats to go far upstream; and in some cases travel by boat is prevented by rapids and falls. The Hudson River

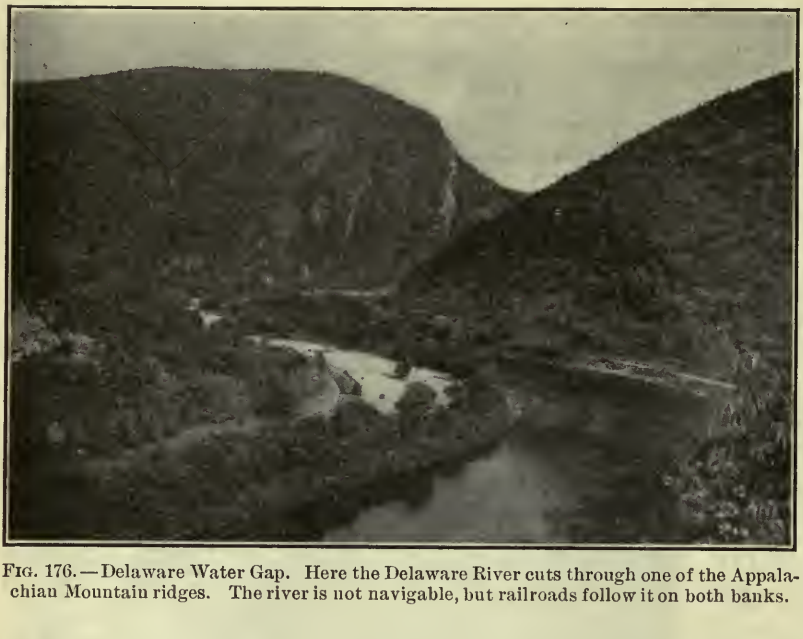

FIG. 176.—Delaware Water Gap. Here the Delaware River cuts through one of the Appalachian Mountain ridges. The river is not navigable, but railroads follow it on both banks.

is the one notable exception; for large steamboats can go up the Hudson as far as the mouth of the Mohawk River (Fig. 177).

The wide mouths of these rivers make excellent harbors, as is proven by the large cities there. Name and locate some of these cities.

The need of more waterways into the interior led very early to the digging of canals. Several have been dug, the longest and most important of which is the *Erie Canal* (Fig. 183), extending from the Hudson River, near Troy and Albany, to Buffalo on Lake Erie. Measure its length. This canal is especially important, because it connects the Great Lakes with the ocean, by way of the Hudson River. On that account it has been a great highway of commerce. Name several cities along its course.

About the time the Erie Canal was finished the locomotive was invented, and railroads began to be built. After that, there was less pressing need for more canals, since railroads could take their place.

4. Railroads

Railroads run from north to south through these states; but most of the great railroads run from the coast westward, toward the interior of the country. The Appalachian Mountains have been a great hindrance in building them. Why? Yet several fine roads now cross these mountains. One of the first was the New York Central, running from New York City to Buffalo. It follows the Hudson River to Albany, then takes the same course westward as the Erie Canal does. All the important cities of these states are now connected by rail.

FIG. 177.—The broad and deep Hudson River as seen from West Point.

reat centers f population . New York ity and vicinity 1) *Population ear New York arbor*

The greatest of all he cities of the United tates is NEW YORK, which contains more than four million inhabitants, and is second only to London among the great cities of the world. There re several other large ities near by, the argest being NEWARK, JERSEY CITY, PATERSON, ELIZABETH, and HOBOKEN Fig. 187), all west of the Hudson River n New Jersey. Although in another state, these cities are so closely related o New York in business that they may almost be considered a part of New York City; so also may YONKERS, on the Hudson, just above that city. Before it became a part of New York, the city of BROOKLYN, on Long Island, was itself fourth among the cities of the country. More than six million persons, or one fifteenth of all the inhabitants of the United States, live within twenty miles of New York harbor.

FIG. 178. — The first railway train which ran out of Albany.

It is, *first of all*, the great convenience for shipping that has caused so great a number of people to collect at this point. Not only can goods easily be sent far inland by water and by rail, as already explained, but they can also be carried on the ocean to any port in the world. The harbor is deep enough for the largest vessels, and large enough to hold all that come. More than half of all the foreign trade of the United States is carried on through this port, which is the leading shipping point in the New World.

(2) *Reasons for this vast population*

The *second* reason for the vast population here is the fact that this is the greatest manufacturing center in the New World.

FIG. 179. — The Empire State Express, one of the trains of the present day on the New York Central Railroad. This picture was taken while the train was running

Nearly every manufactured article that men need is made in or near New York, but one of the chief industries is the

FIG. 180. — A view of lower New York, showing the lofty buildings, or "sky scrapers."

manufacture of clothing. Cotton and woolen goods are sent here from the factories of New England, and other sections, to be made into such articles as women's gowns, men's suits, and undercloth-ing. Large build-ings, in which hun-dreds of men and women are em-ployed, are given up to this work alone.

Iron and coal are so near that the manufacture of iron goods is another great in-dustry. The refin-ing of petroleum is a third, the oil be-ing led, in pipes, from the oil fields of western Penn-

FIG. 181. — The Flatiron building, built in this shape because it occupies the corner where two streets come together. Stores and offices occupy every floor in this tall building.

sylvania to re-fineries in New Jersey, near New York. The refin-ing of sugar is another immense business in New York, Jersey City and Brooklyn; and silk manufacture is carried on ex-tensively at PATERSON.

Merchants from all parts of the United States come to New York to buy goods. The business of sell-ing goods to merchants, to be sold again, called the *whole-sale trade*, is a

third reason why so many people have collected around New York harbor. A large section in the southern part of the city is given up almost entirely to the wholesale trade. Since the land is very expensive, as much use as possible is made of every bit of it. For that reason the buildings are high (Fig. 180). Many of the stores and office buildings are twenty or thirty, and some forty stories high. Goods manufactured in the city, together with others brought from all parts of the world, are collected in this part of New York. These are sold in quantities, or by wholesale, to retail merchants both of New York and of other cities and towns, who then sell them to customers in their own stores.

(3) *Life in the great city* (p. 67)

The difference between life in New York City and upon a farm is striking. On some of the streets in the city scarcely anything but stores can be seen for ten or twelve miles. Many of these stores are small, but some occupy enormous buildings, and employ many hundreds of clerks.

Families whose homes are in the city do not usually occupy a whole house, but often hundreds of people live in one building. These structures, called *apartment houses*, are usually from six to eight stories high, and some even from fifteen to twenty. They are so arranged that one family occupies only a small part of one floor, called an *apartment*. Other families live above and below, as well as on each side, being separated by only a few inches of brick or boards. Since land is so valuable there is usually neither front yard nor back yard.

In the poorer sections of the city the people are even more densely crowded. Some of the children have never seen the country, and they have seen scarcely any birds, trees, or grass, except possibly in one of the city parks. In these crowded sections there are many foreigners from all nations of the earth.

To escape such a crowded city life, hundreds of thousands of men live in suburban towns,

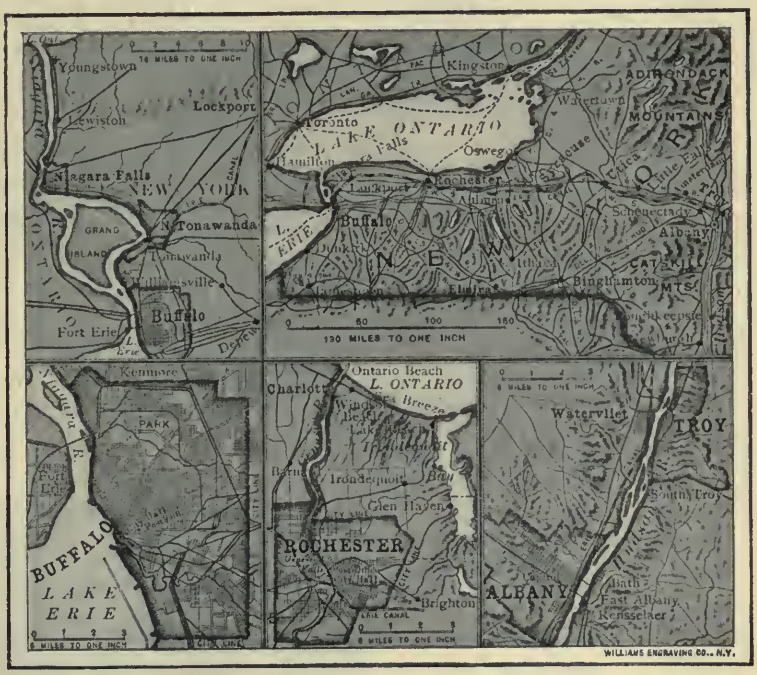

FIG. 182. — Map showing location of Buffalo, Rochester, and Albany.

or country homes, from ten to forty miles from their places of business. Every day they spend from one to three hours traveling back and forth. Some ride upon *elevated railways* built in the street, and supported by iron columns. Others go by train in one of the *subways*, which extend for miles underground, and even cross under the rivers to Brooklyn, Jersey City, and Hoboken.

How different all this is from the country, where perhaps only two or three houses may be seen at a time! Where sunlight and fresh air may enter one's home from all sides of the building!

FIG. 183. — The Erie Canal and other water routes of New York and vicinity.

Where there is plenty of room to play, and where there are green grass, large trees, and singing birds in the yard! No wonder the people living in great cities are anxious to visit the country, the mountains, the lakes, and the seashore during the summer season.

2. Buffalo and cities along the Erie Canal

Most of the other large cities in the State of New York are found along the water and rail routes from New York City to Lake Erie (Fig. 183). The most important of these is BUFFALO (Fig. 182), on Lake Erie, at the western end of the Erie Canal. Before the canal was built, Buffalo was only a village. But both New York and Buffalo have had a very rapid growth since 1825, when the canal was finished. Name other cities along the Erie Cana route (Fig. 183), and reca what has been said abou them.

Since the canal (Fig. 184) i only seventy feet wide, an seven feet deep, all freight con ing in lake steamers from th West must be unloaded at c near Buffalo, and placed in *can boats* before it can be carried o the canal. These clumsy look ing boats are made with broad flat bottoms, in order that the may carry heavy loads withou sinking too deep into the wate They are drawn by horses c mules that walk along the *tow path* at the side. The Eri Canal is now being enlarged to barge canal.

Buffalo is a great railwa center, as well as an im portant lake port. Here quantities o grain, flour, lumber, and iron, brough by lake vessels from the West, ar transferred to railway cars or to cana

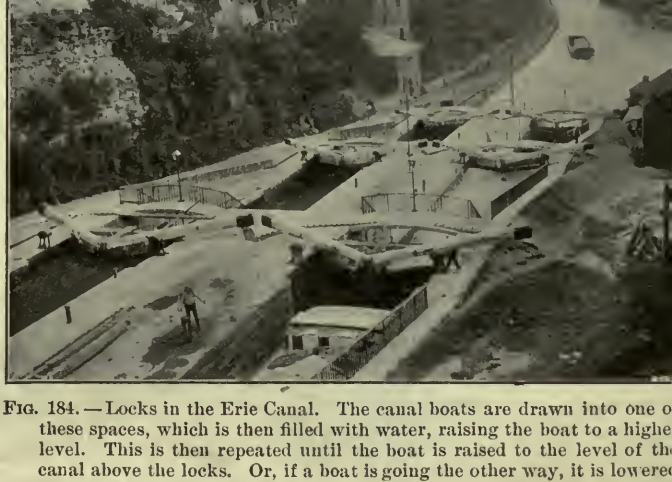

FIG. 184. — Locks in the Erie Canal. The canal boats are drawn into one o these spaces, which is then filled with water, raising the boat to a highe level. This is then repeated until the boat is raised to the level of th canal above the locks. Or, if a boat is going the other way, it is lowere in the locks by letting the water run out.

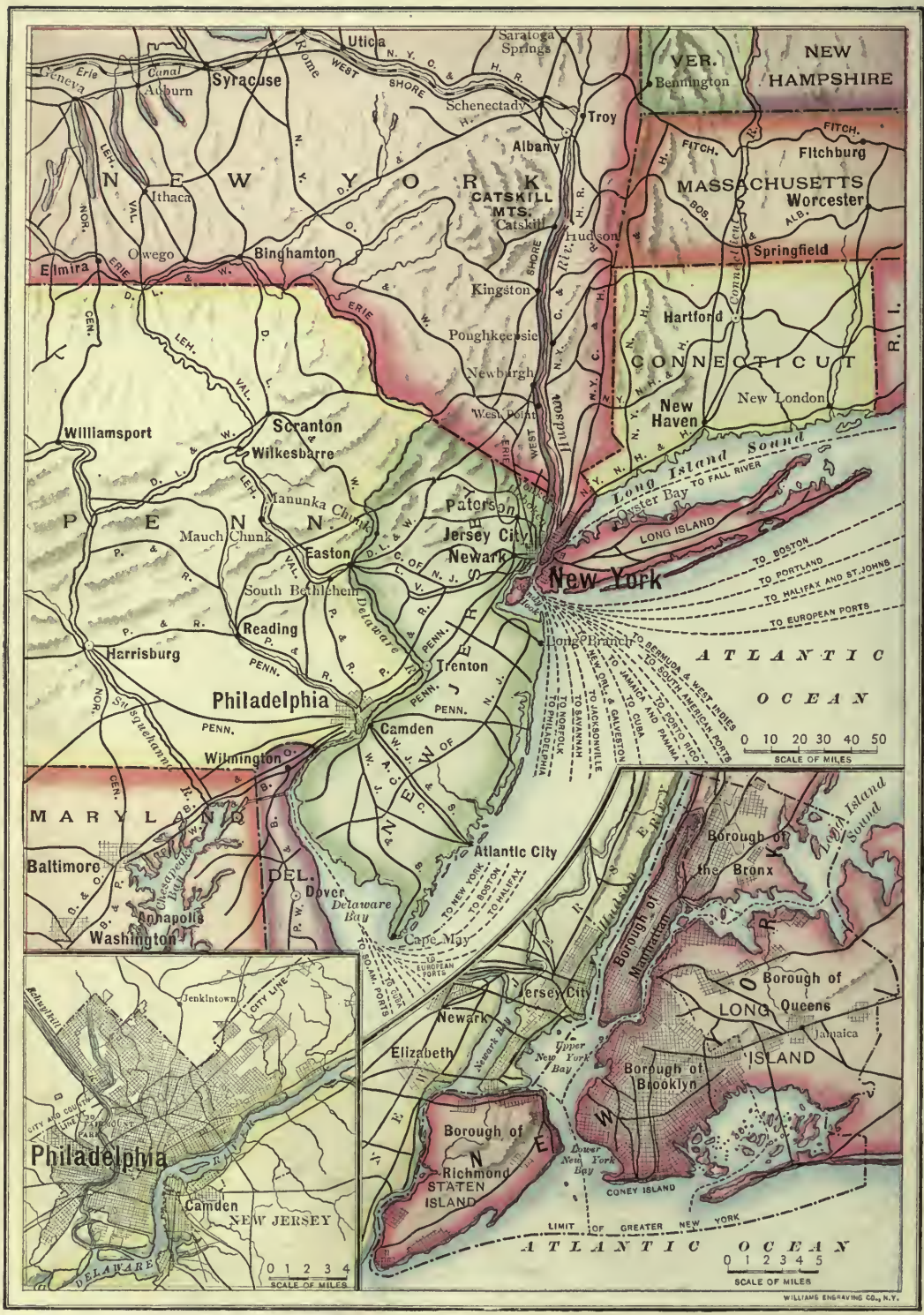
Utica
Saratoga Springs
Rome
West Shore
N. Y. O. & H. R.
Geneva
Erie Canal
Auburn
Syracuse
Schenectady
Troy
Albany
VER.
Bennington
NEW HAMPSHIRE
Fitchburg
Worcester
MASSACHUSETTS
Springfield
Ithaca
Owego
Binghamton
Elmira
CATSKILL MTS.
Catskill
Hudson River
Kingston
Poughkeepsie
Newburgh
West Point
Hartford
CONNECTICUT
R. I.
New London
New Haven
Long Island Sound
Williamsport
Scranton
Wilkesbarre
Manunka Chunk
Mauch Chunk
Easton
Paterson
Jersey City
Newark
New York
Long Branch
Trenton
South Bethlehem
Reading
Harrisburg
Philadelphia
Camden
Wilmington
Atlantic City
Cape May
Delaware Bay
Dover
Baltimore
Annapolis
Washington
MARYLAND
DEL.
NEW JERSEY
ATLANTIC OCEAN
LONG ISLAND
Borough of the Bronx
Borough of Manhattan
Borough of Queens
Jamaica
Borough of Brooklyn
Borough of Richmond STATEN ISLAND
Jersey City
Newark
Elizabeth
Upper New York Bay
Lower New York Bay
CONEY ISLAND
LIMIT OF GREATER NEW YORK
Jenkintown
CITY LINE
Philadelphia
Camden
NEW JERSEY
DELAWARE
SCALE OF MILES
WILLIAMS ENGRAVING CO., N.Y.

FIG. 187.

boats; and coal and manufactured goods are shipped westward. There is also much manufacturing of many kinds (p. 129).

Niagara Falls (Fig. 149), which are about twenty miles from Buffalo, supply electric power for use in lighting the city and in running street cars and factories. Much use is made of this electric power near the Falls, as at the city of NIAGARA FALLS, which has become an important manufacturing center. Power from Niagara is used also for running electric cars between Buffalo and Niagara Falls and between Buffalo and Lockport. This electric power is carried by wire even as far east as Syracuse. How far is that?

Rank of New York State

The State of New York ranks first among the states of the Union in population, manufactures, commerce, and wealth, and is often called the *Empire State*. The great size of New York City, with its manufacturing, commerce, and wealth, is the main reason for the high rank of the State.

3. Philadelphia and neighboring cities

The greatest of all the cities southwest of New York is PHILADELPHIA (Fig. 187), which has over 1,500,000 inhabitants, and ranks third among the cities of the United States. As in the case of New York, other important cities are near by, the largest being TRENTON and CAMDEN, in New Jersey; CHESTER

FIG. 185. — The Battleship *Iowa* going at full speed. This was built in the shipyards below Philadelphia.

FIG. 186. — Independence Hall, in Philadelphia.

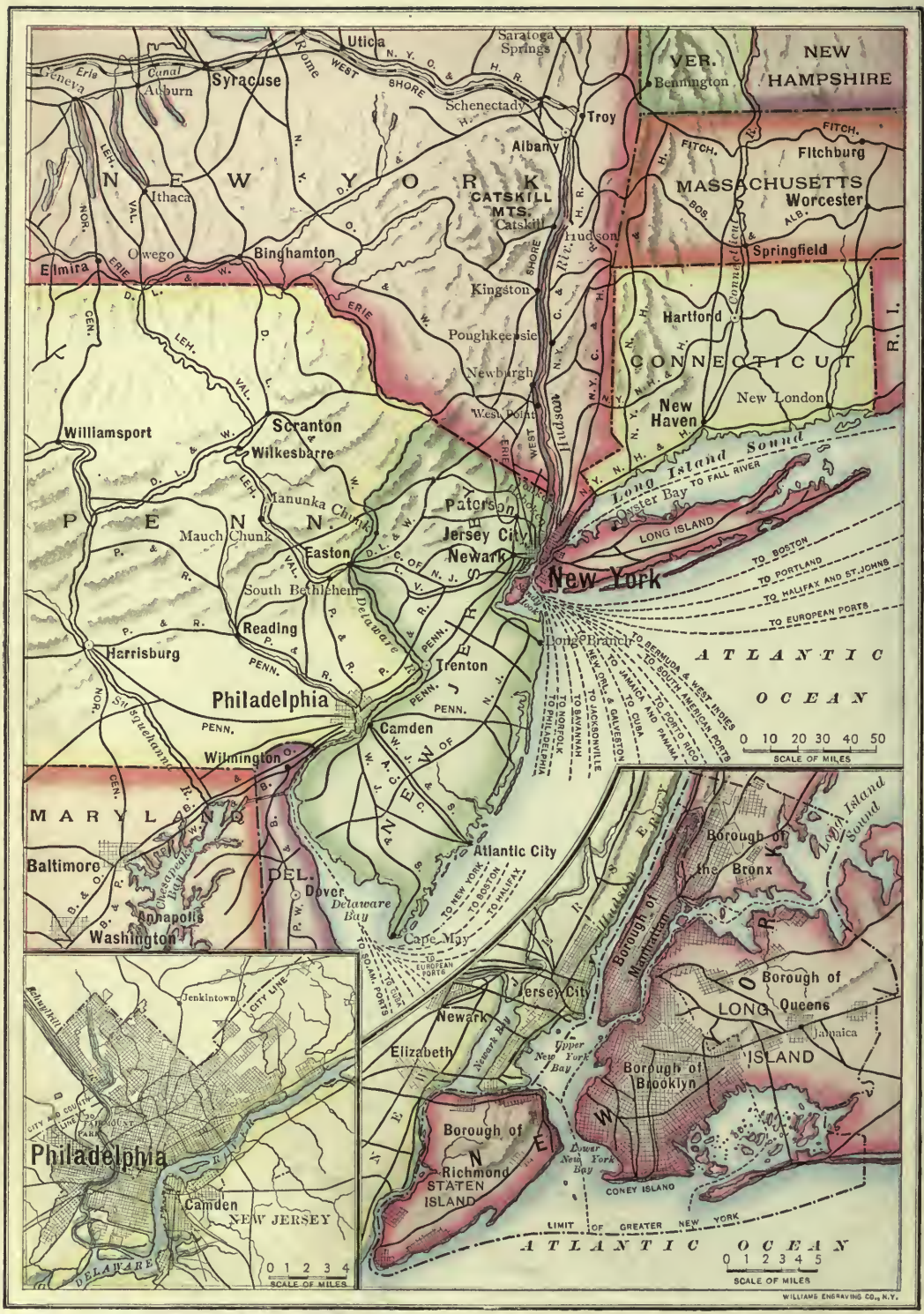
NEW YORK
PENN.
MARYLAND
DEL.
VER.
NEW HAMPSHIRE
MASSACHUSETTS
CONNECTICUT
R. I.
Utica
Saratoga Springs
Rome
Syracuse
Auburn
Geneva
Schenectady
Troy
Albany
Bennington
Fitchburg
Worcester
Springfield
Hartford
New London
New Haven
Catskill
Hudson
Kingston
Poughkeepsie
Newburgh
West Point
Ithaca
Owego
Binghamton
Elmira
Williamsport
Scranton
Wilkesbarre
Manunka Chunk
Mauch Chunk
Easton
South Bethlehem
Reading
Harrisburg
Paterson
Jersey City
Newark
New York
Long Branch
Trenton
Philadelphia
Camden
Wilmington
Baltimore
Annapolis
Washington
Dover
Delaware Bay
Cape May
Atlantic City
Oyster Bay
Long Island Sound
LONG ISLAND
TO FALL RIVER
TO BOSTON
TO PORTLAND
TO HALIFAX AND ST. JOHNS
TO EUROPEAN PORTS
TO BERMUDA & WEST INDIES
TO SOUTH AMERICAN PORTS
TO PORTO RICO
TO JAMAICA TO CUBA AND PANAMA
TO NEW ORLS. & GALVESTON
TO JACKSONVILLE
TO SAVANNAH
TO CHARLESTON
TO NORFOLK
TO PHILADELPHIA
ATLANTIC OCEAN
0 10 20 30 40 50
SCALE OF MILES
Borough of the Bronx
Borough of Manhattan
Borough of Queens
LONG ISLAND
Jamaica
Borough of Brooklyn
Jersey City
Newark
Elizabeth
Upper New York Bay
Lower New York Bay
Borough of Richmond
STATEN ISLAND
CONEY ISLAND
LIMIT OF GREATER NEW YORK
ATLANTIC OCEAN
0 1 2 3 4 5
SCALE OF MILES
Jenkintown
CITY LINE
Philadelphia
Camden
NEW JERSEY
DELAWARE
0 1 2 3 4
SCALE OF MILES
WILLIAMS ENGRAVING CO., N.Y.

FIG. 187.

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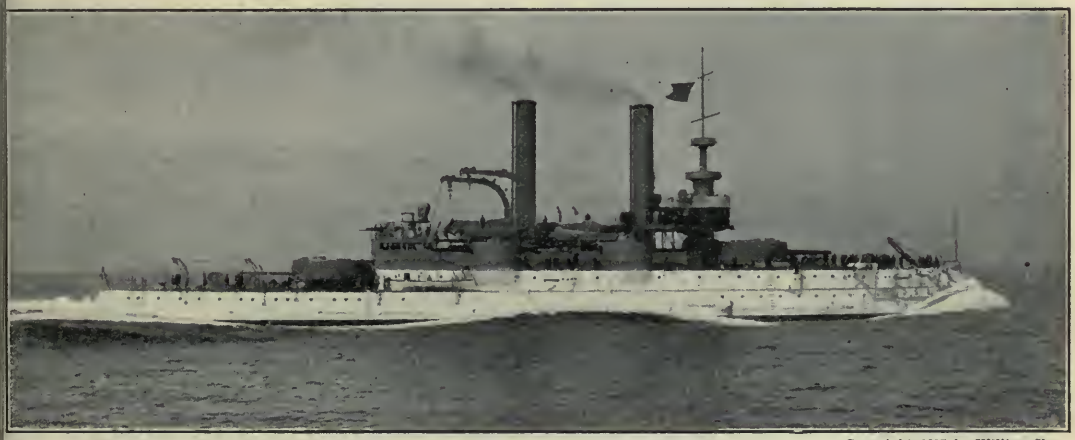

FIG. 185. — The Battleship *Iowa* going at full speed. This was built in the shipyards below Philadelphia.

FIG. 186. — Independence Hall, in Philadelphia.

and NORRISTOWN, in Pennsylvania; and WILMINGTON, in Delaware.

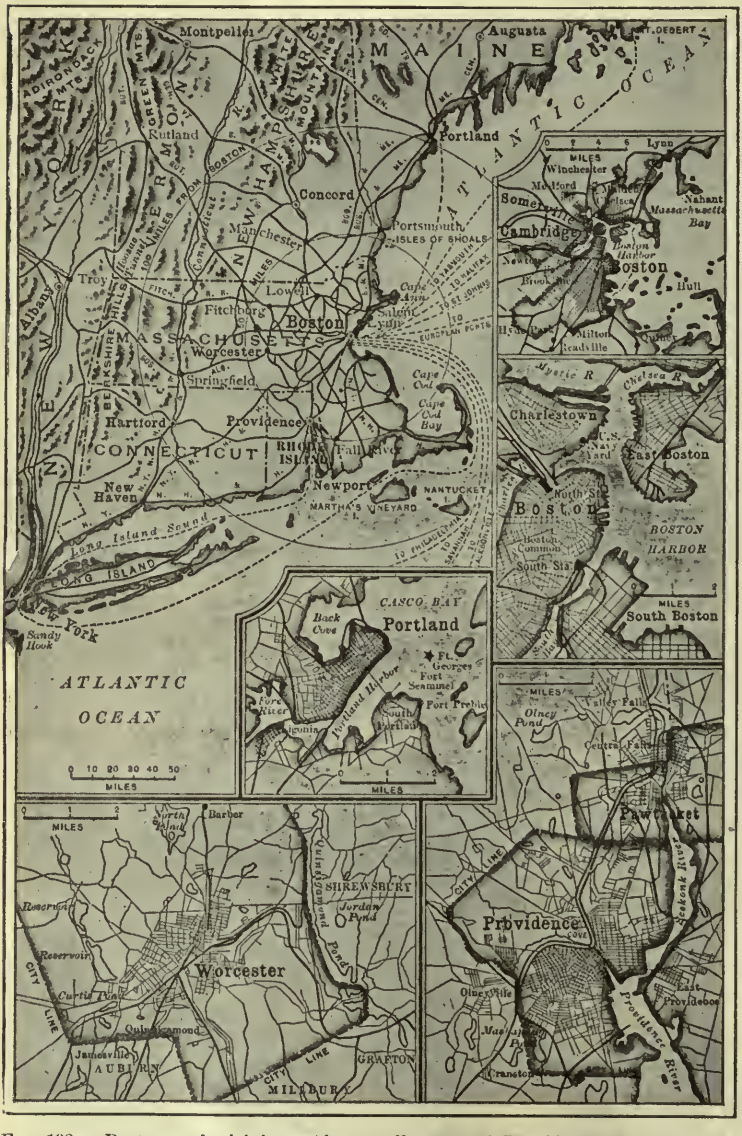

FIG. 188.—Boston and vicinity. Also small maps of Providence, Portland, and Worcester. Notice the steamship and railway lines converging at Boston. Also the number of cities near Boston.

Lines of steamships (Fig. 187) run from Philadelphia to the leading seaports of the United States and foreign countries. Because of its nearness to the coal fields, Philadelphia has becon a great shipping point for coal. Th coal and iron hav made possible the man facture of cars, heav machinery, and ste ships (Fig. 185) a PHILADELPHIA an WILMINGTON. Phil delphia is a center fo manufacturing textile especially woolen good there is much manufa turing of clothing; an in the manufacture c carpets this is the mo important city in th country.

Philadelphia is calle the *Quaker City*, b cause it was founded b William Penn and othe Quakers, many of whos descendants still liv there. It was the hom of Benjamin Franklin and at one time, befor Washington was buil it was the capital of th United States. Ind pendence Hall, in whic the Declaration of In dependence was signed and in which the Con stitution of the Unite States was written, still standing (Fig. 186

Pennsylvania has th city of ERIE, on Lak Erie, as New York has Buffalo; bu while Erie is an important shipping and manufacturing center, it is much smaller than Buffalo

4. Other citie in Pennsylvan

The city in Pennsylvania that ranks next to Philadelphia is PITTSBURG, the seventh city in size in the United States. Pittsburg is located at the point where the Allegheny and Monongahela rivers unite to form the Ohio River, and therefore has extensive water connections. It is a center for the manufacture of iron and steel, and of articles made from them. Indeed, for such work it is the greatest center in the country.

abroad. In return, ships from foreign countries bring such articles as coffee, tea, chocolate, rubber, wool, hides, and bananas, which are needed in New England.

Boston and its vicinity have been important from the earliest days of our history. There, at the beginning of the Revolutionary War, occurred the Boston Tea Party, Paul Revere's Ride, and the Battle of Bunker Hill. The vicinity of Boston is also noted for its eminent

FIG. 189. — A part of Boston, with its fine harbor beyond.

5. Boston

The most important of the New England cities is BOSTON, the fifth city in size in the United States. It is a great manufacturing center, being engaged in most of the industries already named, and especially in making clothing. Its size is chiefly due to its excellent harbor (Fig. 189) and its central location.

The port of Boston is second only to that of New York in importance in the United States. Great quantities of raw materials are received here, to be sent to the factories of New England; and the finished goods are shipped over all the world. Much grain and meat reach Boston from the West to be distributed among smaller cities, or to be shipped

men. Harvard College, the oldest college in the United States, was founded in 1636 at CAMBRIDGE, three miles from Boston. Longfellow, Lowell, Holmes, and Agassiz were professors at Harvard; and Hawthorne, Emerson, Thoreau, and Whittier lived not far from Boston.

6. Cities near Boston

In the vicinity of Boston are many manufacturing cities and towns which also serve as places of residence for the business men of Boston. Among these the largest are CAMBRIDGE and SOMERVILLE (Fig. 188), which have important industries of meat packing, machine manufacturing, and printing. Others are CHELSEA and MALDEN, each engaged in manufacturing rubber goods and other articles. Still farther away are LYNN and SALEM, both important cities.

FIG. 190.—The Washington elm at Cambridge. It was under this tree that Washington first took command of the American Army in July, 1775.

dwell in the cities; an during most of the yea they are closely confined in noisy factories, or in offices and stores. To these, the woode mountains, the silvery lake the rivers, with their fal and rapids, the green valley and the sandy or rocky sea coast offer great attractions and every summer tens o thousands run away fro town for a week or more, t enjoy their vacations at suc places.

Summer resorts

1. Why a nee of vacations

Many go to the gree slopes and woods of the Ad rondacks or the Catskills, in New York; or to the Berkshire Hills of Massachusetts; or to the Whit Mountains of New Hampshire (Fig. 191 or to the mountains in Pennsylvania

2. Where the people spend their vacations

7. Other large cities of New England

PORTLAND (Fig. 188), the largest city in Maine, has an excellent harbor. NEW HAVEN, the largest city in Connecticut, and PROVIDENCE (Fig. 188), the largest in Rhode Island, are both on the seacoast.

The seacoast of New Hampshire is very small, and the largest city, MANCHESTER, lies inland near some falls in the Merrimac River; but on the coast is the important city of PORTSMOUTH. Vermont has *no* seacoast. Its largest city, BURLINGTON, is a lake port on Lake Champlain.

There is so much manufacturing and commerce in the Northeastern States that great numbers of people

FIG. 191.—The railway up the slopes of Mount Washington, on whic thousands of summer visitors are taken to the top of the mounta every summer.

Here they can enjoy the scenery and the mountain life to their hearts' content. Others plunge into the woods of Maine or northern New Hampshire, to hunt and fish, or to canoe upon the streams and lakes; and still others settle down at farmhouses, to enjoy the quiet of the country.

Many others visit the seashore to escape the heat and to bathe in the salt water, or to sail and row. So many go there, that a large part of the coast is dotted with summer cottages and hotels. Indeed, people come here from all parts of the United States. Thousands visit Atlantic City and Long Branch on the New Jersey coast. Nantucket Island and Martha's Vineyard are similar resorts farther north; while just west of them, on Narragansett Bay, is NEWPORT, noted for its many magnificent summer homes.

Along the coast for many miles north and south of Boston there are noted summer resorts; and the especially cool summers on the coast of Maine also attract great numbers of people.

Review Questions

1. What can you say about the area of the Northeastern States? 2. Describe their surface. 3. Name and locate the principal mountainous regions. 4. Describe the coast line. 5. Explain what has made it so irregular. 6. Describe the climate in the north, with some of the reasons. 7. In the south. 8. What can you say about the population of these states? 9. Why is the population so great? 10. Why is the farming not especially important? 11. Explain why the farms are usually small, and much used for truck farming. 12. Why is there much dairying and raising of animals? 13. Locate some of the more fertile sections and name their products. 14. Name other very important farm products. 15. What can you say about the supply of food? 16. Locate the forests. 17. Tell how the lumbering industry is carried on. 18. What about the hardships of the lumberman's life? 19. State the value of the forests. 20. What kinds of fish are caught in this region? 21. Name and locate the centers of the fishing industry. 22. Tell about the mackerel fishing. 23. Fishing for halibut and cod. 24. Other ocean foods. 25. About the stone and clay. 26. About the salt industry. 27. About the production of petroleum and gas. 28. How has coal been formed? 29. What is the origin of the different kinds of coal? 30. Tell about the amounts and kinds of coal in Pennsylvania. 31. Describe the method of mining coal. 32. How is anthracite prepared for market? 33. State the uses of coal. 34. Where is iron ore found? Tell about its importance. 35. Its appearance; also how formed, and mined. 36. Why is manufacturing especially important in these states? 37. How is iron made? 38. Name the kinds of iron. 39. Locate the principal centers for work in metal, and name the articles made. 40. Tell about the manufacture of glass. 41. Pottery and brick. 42. Cement. 43. Give some idea of the extent and variety of the cotton and woolen manufacture. 44. Describe the method of cotton manufacturing. 45. Of woolen manufacture. 46. Name and locate the chief cities engaged in textile manufacture. 47. What cities are engaged in leather manufacture, and what are some of the articles made? 48. How is leather prepared? 49. Describe the method of making boots and shoes. 50. Tell about manufactures from the forest. 51. Name other prominent kinds of manufacturing in these states. 52. Tell about changes that have taken place in methods of manufacturing. 53. Why is commerce especially important in these states? 54. What about the harbors? 55. The rivers and canals? 56. The railroads? 57. Name and locate several cities very near New York. What is the population in and near New York? 58. Give reasons for so vast a population. 59. Describe life in the great city. 60. State some facts about Buffalo, and cities along the Erie Canal. 61. What can you say about the rank of New York State? 62. Tell about Philadelphia and neighboring cities. 63. Other cities in Pennsylvania. 64. Boston. 65. Cities near Boston. 66. Other large cities. 67. Explain the special need of vacations for people living in great cities. 68. Where and how do the people in these states spend them?

Review Questions by States

Maine (Me.). 1. Draw the coast line of Maine. 2. Why is it so irregular? 3. Find the principal rivers. 4. What cities are situated on each? 5. Should you expect much fishing along the coast? Why? 6. What reasons can you give why so many people resort to the Maine coast and woods in summer? 7. Describe lumbering in Maine. 8. Which is the largest city? How does it compare in size with Boston and Providence? (See Appendix at end of book.) 9. What other cities in Maine are mentioned in the text? Find them on the map. 10. Draw an outline map of Maine, locating the principal rivers and lakes, the capital, and other leading cities. Do the same for each of the other states as you study about it.

New Hampshire (N.H.). 11. What large lakes are found in this state? What river? 12. Name the cities on it. 13. For what are they important? 14. Why are there not more cities in northern New Hampshire? 15. What industry should you expect there? 16. Locate the White Mountains. 17. Where should you expect to find most farming? 18. How does the largest city in the state compare in size with Portland?

Vermont (Vt.). 19. What large lake forms a part of the western boundary? Into what waters does it empty? 20. What river flows along the eastern boundary? Through what states does it flow? 21. What is the name of the mountains? 22. Lumbering is carried on, as in Maine; into what waters must the lumber be floated? 23. What other Vermont industries are mentioned in the text? 24. There is also farming in the fertile valleys, and manufacturing, as at Brattleboro. Find Brattleboro. 25. Compare the size of the largest city with that of Manchester, N.H.

Massachusetts (Mass.). 26. Compare Massachusetts with Vermont and Maine in area; in population. (See Appendix.) 27. Name the large cities near Boston (Fig. 188). 28. Find the principal cities mentioned in the text, and tell where each is located. 29. For what is each important? 30. What advantages do you see in the location of each? 31. Name several seaports; several manufacturing cities. 32. Where is the mountainous portion of the state? 33. What effect should you expect the mountains to have upon agriculture? 34. State as clearly as you can the reasons why Boston has grown to be a large city. 35. Of what importance is Boston to the cities near by? 36. Of what importance are they to Boston?

Rhode Island (R.I.). 37. Compare this state with Massachusetts and Maine in area. It is the smallest state in the Union. 38. What is the name of the bay in this state? What cities are located on it? 39. What large city is in Rhode Island? How is it important? 40. Compare its size with that of Boston and Portland. 41. Should you expect much lumbering in Rhode Island? Why? 42. What kind of farming? Why?

Connecticut (Conn. or Ct.). 43. Where are the mountains in this state? 44. Locate each of the cities mentioned in the text. 45. Tell how each is important. 46. The farms of Connecticut average better than those of Maine. Why? 47. There is little lumbering in the state. Why? 48. Compare the size of New Haven with that of Boston and Portland.

New York (N.Y.). 49. Where are the mountains? 50. What are their names? 51. Why are forests extensive here? Why is there little agriculture among the mountains? 52. What about the surface features of the rest of the state? 53. What about the extent of agriculture? 54. Tell about the dairying. 55. What fruits are important in New York, and where are they raised? 56. What waters form parts of the boundary of the state? 57. Into what rivers do the lakes empty? 58. What rivers drain New York? 59. State clearly the importance of the Erie Canal. 60. Which cities mentioned in the text are on the canal? Which are on the Hudson? 61. Compare New York in size with all of New England.

New Jersey (N.J.). 62. Why should peaches and grapes grow better in New Jersey than in New England? 63. Name and locate each of the cities mentioned in the text. 64. For what is each important? 65. In what ways are some of the largest cities dependent upon the products of Pennsylvania? 66. What cities in New Jersey are situated on or very close to New York Bay?

Pennsylvania (Pa. or Penn.). 67. Where would you look for the best farm land? 68. The principal forests? 69. The leading coal mines? 70. Where are the principal cities? Why located where they are? 71. Why is manufacturing so important in this state? 72. What kind of manufacturing is especially important?


SOUTHERN STATES
(WESTERN SECTION)
Scale of Miles
0 50 100 150 200 250 300
Cities with over 500,000 St.Louis
Cities with 100,000 to 500,000 New Orleans
Cities with 25,000 to 100,000 Houston
Smaller Places Sherman
Capitals with less than 25,000 JACKSON
Capitals
Other Cities
Williams Engraving Co., N.Y.
100° Longitude West from Greenwich 95° 90°
NEBRASKA
COLORADO
KANSAS
MISSOURI
IOWA
ILLINOIS
OKLAHOMA
ARKANSAS
NEW MEXICO
TEXAS
LOUISIANA
MISSISSIPPI
TENN.
MEXICO
GULF OF MEXICO
TROPIC OF CANCER
Omaha
S.Omaha
Council Bluffs
Des Moines
Davenport
Rock Island
Burlington
Peoria
Lincoln
Denver
Colorado Springs
Pueblo
St.Joseph
Quincy
Springfield
Kansas City
Topeka
Jefferson City
St.Louis
E. St.Louis
Wichita
Joplin
Beaver
Alva
Enid
Perry
Vinita
Tulsa
Guthrie
Kingfisher
Muskogee
El Reno
Oklahoma City
Shawnee
Hobart
Lawton
McAlester
Ft.Smith
Tishomingo
Ardmore
Atoka
Durant
Texline
Lipscomb
Tascosa
Amarillo
Childress
Llano Estacado or Staked Plain
Lubbock
Wichita Falls
Denison
Sherman
Paris
Texarkana
Greenville
Dallas
Ft.Worth
Marshall
Cleburne
Tyler
Corsicana
Abilene
Colorado
Brownwood
Palestine
San Angelo
Waco
Lufkin
Lampasas
Austin
Brenham
Beaumont
Port Arthur
Houston
Galveston
Richmond
Gonzales
San Antonio
Delrio
Eagle Pass
Porfirio Diaz
Corpus Christi
Laredo
Nueva Laredo
Brownsville
Matamoros
Tampico
El Paso
Sierra Blanca
Pecos
Alpine
Sonora
Roswell
Santa Fe
Albuquerque
Eureka Springs
Fayetteville
Tahlequah
Van Buren
Little Rock
Argenta
Hot Springs
Mena
Arkadelphia
Pine Bluff
Camden
Monticello
Helena
Paragould
Jonesboro
Newport
Wynne
Memphis
Holly Springs
Water Valley
Greenville
Greenwood
Yazoo City
Canton
Vicksburg
Jackson
Wesson
Natchez
Shreveport
Monroe
Delta
Natchitoches
Pickering
Alexandria
Opelousas
Lake Charles
Baton Rouge
Donaldsonville
New Iberia
Franklin
Thibodaux
New Orleans
Matagorda Bay
Matagorda I.
San Antonio Bay
St.Joseph I.
Aransas Pass
Laguna Madre
Padre I.
Galveston Bay
San Luis Pass

FIG. 192.


SOUTHERN STATES
(EASTERN SECTION)
Scale of Miles
0 50 100 150 200 250 300
Cities with over 500,000 New York
Cities with with 100,000 to 500,000 New Orleans
Cities with 25,000 to 100,000 Augusta
Smaller Places Columbus
Capitals with less than 25,000 JACKSON
National Capitals State Capitals Other Cities
Williams Engraving Co., N.Y.
Longitude West from Greenwich
TROPIC OF CANCER
GULF OF MEXICO
ATLANTIC OCEAN
ILLINOIS
INDIANA
OHIO
PENNSYLVANIA
MARYLAND
NEW JERSEY
DEL.
WEST VIRGINIA
VIRGINIA
KENTUCKY
TENNESSEE
NORTH CAROLINA
SOUTH CAROLINA
MISSOURI
ARKANSAS
MISSISSIPPI
ALABAMA
GEORGIA
FLORIDA
LOUISIANA
CUBA
BAHAMA ISLANDS
NASSAU
ISLE OF PINES
MEXICO
FLORIDA KEYS
Florida Strait
Havana
Key West
Cape Sable
Cape Romano
Charlotte Harbor
Tampa Bay
Cape Canaveral
Lake Okeechobee
The Everglades
Delta of the Mississippi River
Cape San Blas
Apalachee Bay
Cape Fear
Cape Romain
Cape Hatteras
C. Lookout
C. Charles
C. Henry
Chicago
Cleveland
Toledo
Pittsburg
Philadelphia
Baltimore
New York
Trenton
Washington
Richmond
Norfolk
Columbus
Cincinnati
Indianapolis
St. Louis
Louisville
Nashville
Memphis
Knoxville
Chattanooga
Atlanta
Birmingham
Montgomery
Augusta
Charleston
Savannah
Jacksonville
New Orleans
Mobile
Pensacola
TALLAHASSEE
JACKSON
BATON ROUGE
FRANKFORT
RALEIGH
Columbia
Wilmington
Tampa
Miami
Key West

FIG. 192.

Why? 73. What advantage do you see in the position of Pittsburg? 74. By or through what states would one pass in going by boat from Pittsburg to the Gulf of Mexico? (See map, Fig. 138.) 75. Measure the length and width of Pennsylvania. Also find its area. (See Appendix.) 76. Is Pennsylvania larger or smaller than New York? New England? 77. Is it larger or smaller than the state you live in? How much?

General Review Questions

1. Describe the surface features of this group of states from the relief map (Figs. 145 and 146). 2. State the principal industries. 3. In which states are they carried on? 4. Make a list of the ten largest cities. 5. Locate each of these cities, and explain its importance. 6. Make a drawing of these states, including the chief rivers, cities, mountains, and the state boundaries.

Suggestions

1. Make a drawing of New York State, showing the Hudson River and the Erie Canal. 2. Explain why New York City and Buffalo, at opposite ends of the state, are such large cities. 3. Collect pictures of Niagara Falls. 4. Can you give a reason why the Erie Canal was dug to Lake Erie rather than to Lake Ontario? 5. How can a canal be built where land is not level? 6. Give reasons why freight charges are less on canals than on railroads. 7. Make drawings of some of the more common fish. Fill in the colors. 8. Visit a fish store to see the kinds of fish mentioned in the text. 9. Make a collection, for the school, of some marble, granite, slate, hard coal, soft coal, cotton, wool, leather, and iron ore. 10. Collect samples of cast iron, wrought iron, and steel. 11. Write a composition telling why one might prefer to live in a large city, or in the country. 12. What names beginning with *New* do you find on the map? How can you explain such frequent use of this word? 13. Write the abbreviation for each of the states in this group. 14. Name and locate the capital of each state in this group. 15. Find from what places in these states canned fruits and vegetables, sold in a neighboring grocery store, are obtained. 16. Visit some factory near you. Find how many persons are employed there, how much raw material is consumed per week, and how much it costs.

3. The Southern States

Map study

In which states of this group are there mountains? 2. What are the names of the mountains? 3. Where are the plains (Fig. 194)? 4. Which is the largest river? Name and trace its principal tributaries. 5. Locate Chesapeake Bay. What rivers enter it? 6. What large cities are on it? 7. How is Texas separated from Mexico? 8. Which is the largest state? Which the smallest? How does it compare in area with Rhode Island? In population? (See Appendix.) 9. Which state is largely a peninsula? 10. How far distant are the southern points of Florida and Texas from the Tropic of Cancer? What does this suggest about the climate of the Southern States? 11. What waters east and south of these states?

States included here

These states are not always grouped together as Southern States. Sometimes Kentucky is considered one of the Central States, which is the next group to be studied; and Delaware, Maryland, Virginia, and West Virginia are often classed with New York, New Jersey, and Pennsylvania, as the Middle Atlantic States. Name the sixteen states of this southern group.

Area and population

These sixteen states have more than five times the area of the Northeastern States; and Texas alone, the largest state in the Union, is larger than the entire group of Northeastern States.

The population of all the Southern States together is not much greater than that of the Northeastern States. This fact suggests that the chief occupations may be different from those in the states already studied.

Surface features

We have seen that much of the land in the Northeastern States is mountainous or hilly. The Appalachian Mountains extend also


ATLANTIC OCEAN
GULF OF MEXICO
RELIEF MAP
OF THE
SOUTHERN STATES
SCALE OF MILES
0 50 100 150 200 250 300

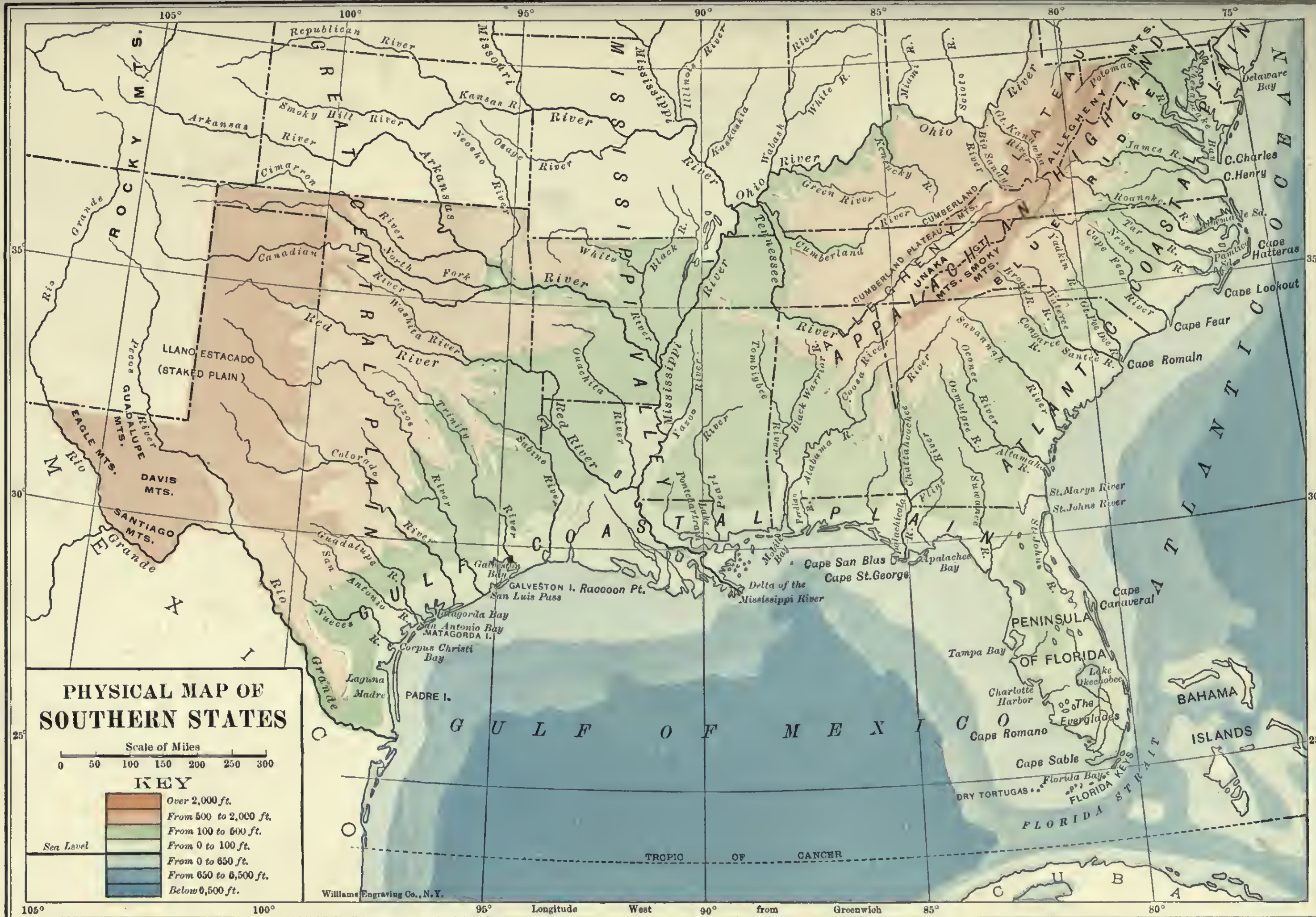
PHYSICAL MAP OF
SOUTHERN STATES
Scale of Miles
0 50 100 150 200 250 300
KEY
Over 2,000 ft.
From 500 to 2,000 ft.
From 100 to 500 ft.
From 0 to 100 ft.
Sea Level
From 0 to 650 ft.
From 650 to 6,500 ft.
Below 6,500 ft.
GREAT CENTRAL PLAIN
MISSISSIPPI VALLEY
GULF COASTAL PLAIN
ATLANTIC COASTAL PLAIN
APPALACHIAN HIGHLAND
ALLEGHENY PLATEAU
BLUE RIDGE
CUMBERLAND PLATEAU
UNAKA MTS.
SMOKY MTS.
ROCKY MTS.
LLANO ESTACADO
(STAKED PLAIN)
GUADALUPE MTS.
DAVIS MTS.
EAGLE MTS.
SANTIAGO MTS.
GULF OF MEXICO
ATLANTIC OCEAN
MEXICO
CUBA
BAHAMA ISLANDS
PENINSULA OF FLORIDA
FLORIDA KEYS
FLORIDA STRAIT
DRY TORTUGAS
Cape Hatteras
Cape Lookout
Cape Fear
Cape Romain
Cape Canaveral
Cape Romano
Cape Sable
Cape San Blas
Cape St. George
C. Charles
C. Henry
Delaware Bay
Tampa Bay
Charlotte Harbor
Lake Okechobee
The Everglades
Apalachee Bay
Mobile Bay
Delta of the Mississippi River
GALVESTON I.
Raccoon Pt.
San Luis Pass
Galveston Bay
Matagorda Bay
San Antonio Bay
MATAGORDA I.
Corpus Christi Bay
PADRE I.
Laguna Madre
TROPIC OF CANCER
Longitude West from Greenwich
105° 100° 95° 90° 85° 80° 75°
35° 30° 25°
Williams Engraving Co., N.Y.

FIG. 194.

across some of the Southern States, as you can see from the map. Name the states that these mountains cross.

1. The mountains

These mountains are generally low, as they are in the states farther north; but in western North Carolina and eastern Tennessee they are much higher. In fact, the highest peak east of the Mississippi River is Mount Mitchell in North Carolina. It rises 6711 feet, or 432 feet higher than Mount Washington in New Hampshire.

There are also low mountains in western Arkansas and in eastern Oklahoma; and a portion of the Rocky Mountains extends across western Texas.

2. The plains

The rest of this section consists mainly of plains. Along almost the entire coast, from New Jersey to western Texas, there is a broad strip of low, level land known as the *Coastal Plains*. The Coastal Plains are very extensive in Florida, which is, therefore, a remarkably level state (Fig. 195).

(1) *The Coastal Plains*

Between the Coastal Plains and the Appalachian Mountains, on the east and south, there is a very fertile, rolling country called the *Piedmont* (meaning "foot of the mountain") Plateau. It slopes seaward,

(2) *The Piedmont Plateau*

FIG. 195. — Much of the South is level land like that in the picture, which shows an immense peach orchard on the plains of Florida.

causing the streams, which are short, to flow in the same direction.

From New York to Alabama the streams that flow from the Piedmont Plateau to the Coastal Plains have rapids and falls where they cross the dividing line between these two regions. This boundary is, therefore, called the *Fall Line* (Fig. 196). There are rapids and falls along this line, because the streams have been able to dig more rap-

(3) *The Fall Line and its importance*

idly into the soft layers of the Coastal Plains than into the harder rocks of the Piedmont Plateau.

Before white men came, the Indians placed their villages on the streams

FIG. 196.—The Fall Line. Coastal Plains dotted, Piedmont and other sections left white. Cities printed in heavy type are located along the Fall Line.

along this line. The early settlers also located their villages here, partly because of the water power, and partly because boats going upstream were stopped by the rapids and falls. Now many of these villages have become large cities. Note (Fig. 196) how many cities are on the Fall Line. Name them.

(4) *Other plains*

As in western Pennsylvania, the portions of these states just west of the Appalachian Mountains are a low plateau deeply cut by river valleys. It gradually becomes lower and more regular farther west, until it merges into the broad and fertile plains of the Mississippi Valley.

West of the Mississippi the land gradually rises again until in western Texas it forms a plateau 4000 to 5000 feet above the level of the sea. This plateau region is a part of the Great Plains of the West.

One of the most level parts of this region is along the Mississippi River. This river is bordered on both sides by broad, fertile flood plains; and at its mouth is a large and very level delta, whose surface is only a few feet above the sea.

Chesapeake Bay affords several excellent harbors. South of Norfolk the coast line is much more regular, and fine harbors are not so numerous as they are in the Northeastern States. There are a number of bays, and on some of them there are good harbors. But others are too shallow for large vessels, and some of them are shut in by sand bars. Where cities

3. The coast line

FIG. 197.—Another view in the Southern States. Much of the land is as level as this. The crop raised in this field is the peanut, which the boys and girls are picking from the roots of the peanut plants.

have grown on such bays the entrances are kept open by dredging or by building jetties which cause a current that sweeps the sand away from the channel.

Southern Florida has a very irregular coast with many reefs and small islands, called *keys*. This irregular coast, and in fact the whole southern end of Florida, has been the work of coral polyps. These animals live in countless numbers in the warm waters of the Gulf Stream which flows along the Florida coast. They have built coral reefs here, and the limestone of southern Florida is made of the remains of the coral.

FIG. 198. — A view at Miami in Florida, showing the palms and other vegetation of a warm climate.

The climate

The climate of this region is much better for farming than that of the North-eastern States. There is more rain in nearly all parts except in western Texas, where the chief industry is grazing.

The temperature is especially favorable, for the winters are not severe. During the cold, disagreeable Northern winter, the weather in the South is mild, like spring and autumn in the North. Flowers are in blossom and birds are singing, many of the birds having migrated there from the North for the winter. Large numbers of Northern people also go South to spend the winter.

The summers too are more favorable, for they are longer than in the North-eastern States. Therefore, many kinds of plants can be grown here that cannot live in the North. It is easier also to raise cattle and other live stock. They can be left out of doors in winter, and can find grass to eat when the ground in the North is frozen and covered with snow.

FIG. 199. — A cotton field on a Southern plantation in the picking season.

Agriculture

1. Its rank as an industry

With its large amount of level land, its fertile soil and favorable climate, the South has great advantages for

agriculture over the Northeastern States. Many people are engaged in other occupations, but farming is the leading industry. The farms here are usually called *plantations*.

Three very important crops are raised on the Southern plantations that cannot be grown in the North; namely, cotton, sugar cane, and rice.

The most important of these crops, indeed the most valuable of all the farm products of the South, is cotton. It is the principal crop in all the states from North Carolina to central Texas. This region is often spoken of as the *cotton belt*.

2. Cotton
(1) *Its importance*

In 1908 the Southern States produced about 13,500,000 bales of cotton, each weighing a little over 500 pounds. In the same year the entire world produced a little over 18,000,000 bales, which makes it clear that the United States furnished much more than half of all the cotton grown. Every person has use for cotton. Dresses, hosiery, much underclothing, thread, and, indeed, hundreds of articles are made of it. We see, then, that one of the chief industries of the Southern States is to help clothe the peoples of the world. The amount of cotton raised in one year is usually worth more than all the gold and silver mined in the whole world in a year. It is also worth as much as all the wheat produced in the United States in a year, or even more. Even if there were no other crop raised there, cotton alone would make the Southern States of great importance.

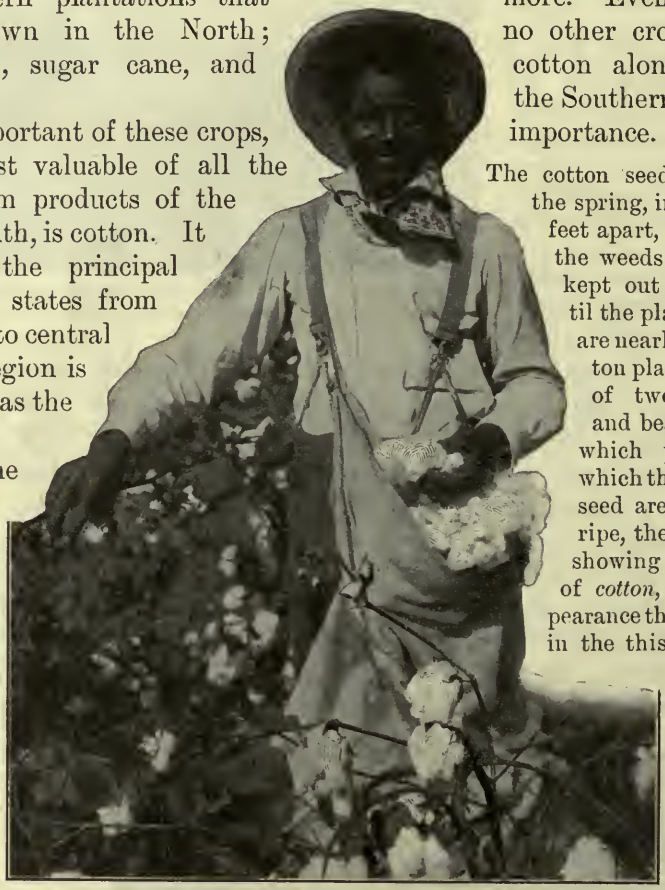

Fig. 200. — Picking cotton on a Southern plantation. The white, woolly cotton is seen on the plant in the lower right-hand corner.

(2) *Method of raising and marketing it*

The cotton seeds are planted in the spring, in rows about three feet apart, and the weeds are kept out until the plants are nearly grown. The cotton plant reaches a height of two or three feet, and bears large blossoms which produce pods, in which the cotton and cotton seed are inclosed. When ripe, the pods burst open, showing the white tufts of *cotton*, resembling in appearance the downy substance in the thistle, or in the pod of the milkweed.

When a great number of these pods have opened, a cotton plantation presents a beautiful sight, — much like a field flecked with snow (Fig. 199). Then the busy season for the pickers begins. As many as two or three hundred men, women, and children may be at work in one field, carrying bags to be filled with cotton, and singing and chattering the livelong day.

When plucked from the pods, the cotton is attached to seeds, and these must be removed before the cotton can be of use. The seedless cotton is tightly pressed into bales, covered

with coarse bagging, bound with iron bands, and shipped to the warehouses, to be sold.

A second crop that is produced nowhere else in the United States but in the South is *sugar cane*. There are a number of plants from whose sap sugar is made. One of these, the sugar maple, has already been mentioned (p. 133); another is the sugar beet, raised in great quantities in Europe, and also, of late, in many of our states. This beet is now a very important source of sugar, because it can be raised in a cool, temperate climate. For a long time, however, the chief source of sugar has been the sugar cane, a plant that looks somewhat like corn (Fig. 202).

3. Sugar cane and sugar

(1) *Plants from which sugar is obtained*

Sugar cane requires a fertile soil, and grows only in warm regions where there is little or no frost, even in winter. For this reason most of the cane sugar comes from tropical lands. Our most noted sugar district is the delta of the Mississippi River in Louisiana; but sugar raising is increasing in importance in Texas and in Georgia.

(2) *Where sugar cane is grown*

FIG. 201. — The cotton belt. Each dot represents 1,000,000 pounds of cotton.

Some single plantations in these states have several thousand acres in sugar cane. The cane is planted in either the fall or spring, in rows about six feet apart. The stalks grow in the summer to be two or more inches in diameter, and reach such a height that a man riding through a field on horseback may be entirely hidden from view. The cane is ready to be cut in the fall, after the middle of October. As soon as the stalks are cut, they are drawn to the sugarhouse in wagons, or, on the larger plantations, in railway cars (Fig. 203).

(3) *How it is cultivated*

FIG. 202. — Cutting the sugar cane on a plantation in Louisiana.

In the sugarhouse the cane is ground between rollers in order to squeeze out the juice. The waste cane, left after the juice is pressed out, is used as a fuel to run the engines of the sugarhouse; the juice, or sap, is placed in large vats and warmed, to drive out the water in it and to crystallize the sugar. This

(4) *How the sugar is obtained*

FIG. 203. — Carrying the sugar cane to the cars which will take it to the sugarhouse. A scene on a Louisiana plantation.

leaves two products, a thick black molasses, and brown sugar. Some large sugarhouses produce as much as 14,000,000 pounds of sugar in a year.

The crude, brown sugar is sent from the sugarhouse to a refinery, either in NEW ORLEANS or in the North. At the refinery it is changed to white sugar, from which the various grades of granulated, powdered, and lump sugar are made. In changing the brown sugar to white, burned bones, called bone black, are used to filter out the impure parts. The bones are obtained from Chicago, and elsewhere, where large numbers of animals are killed for meat.

The molasses is used for various purposes, some of it being manufactured into sirup for the table, and some of it into rum. Molasses is a by-product, like sawdust in a lumber mill, and is not of great value to the sugar raiser.

4. Rice

(1) *Its importance as a food*

Rice, a third Southern crop that is not grown in the North, is one of the most important foods in the world; it is, in fact, the chief food of some nations, for example, the Chinese. It is not eaten so much in our country, but still we use far more than we raise.

(2) *Why we may raise more in the future*

One reason why we have raised too little rice for our use is that it requires a warm climate and a damp, even a swampy soil. The climate is suitable in many parts of the South, but the wet soil is not so common. On the Coastal Plains and the river flood plains, from the Carolinas to Texas, there is some such land. There rice culture has long been carried on, the principal districts being in South Carolina and Louisiana.

FIG. 204. — Threshing rice on a large rice plantation in Louisiana.

In recent years rice production has been greatly increased by irrigation. By leading the water from streams, or springs, it has been found possible to make the soil as wet as necessary even on some of the higher, well-drained plains. With irrigation, rice culture may be carried on over much of the warmer part of the South. Some day, therefore, our country may supply all the rice we need, and even have some to spare. Louisiana, Texas, and South Carolina produce most of the rice now raised in the country, though some comes from other Southern States.

5. Tobacco

When white men first came to America, they found the Indians smoking a weed called *tobacco*. The white men soon learned the habit from the Indians, and introduced it into Europe, so that a great demand for tobacco arose. From that time, one of the principal crops of Virginia has been tobacco. Kentucky now raises even more than Virginia, and these two states together produce more than one half of the entire amount grown in our country. Yet tobacco raising is an important industry in nearly every one of the Southern States, Tennessee and North Carolina growing an especially large amount.

Some tobacco is raised also in the Northern States, even as far north as the Connecticut Valley (p. 117).

The leading tobacco markets of the Southern States are RICHMOND, PETERSBURG, LYNCHBURG, and DANVILLE, Va.; DURHAM, N.C.; CLARKSVILLE, Tenn., and LOUISVILLE, Ky.

6. Other important crops

Besides the crops that have been named, almost all the farm products common to other parts of the country are raised in the South. For instance, great amounts of corn, wheat, hay, and oats are grown, as well as fruits and vegetables.

FIG. 205. — A field of tobacco in Tennessee.

Truck farming and gardening are also profitable industries. In the warm South, fruits and vegetables ripen earlier than in the North, and these early products can be sent North for sale long before the season for them there. There is so great a demand for these early fruits and vegetables, that gardening has rapidly developed in recent years.

Whole trainloads of tomatoes, strawberries, peaches, green peas, potatoes, and other fruits and vegetables are sent

FIG. 206. — A field of corn in Arkansas. Notice how very tall the corn grows in the warm climate.

to Northern cities during early spring and summer.

In the most southerly part of this group, especially in Florida, fruits that demand an almost tropical climate are grown. Among these are the orange (Fig. 207), lemon, and grapefruit; and in southern Florida, the pineapple, cocoanut, and banana.

7. Stock raising

Various kinds of live stock, such as horses, cattle, sheep, and hogs, are raised, each plantation usually having some of these animals. Large numbers of cattle are reared also in the open pine forests of the Coastal Plains, especially in Florida and Georgia.

An important draft animal, well suited to the warm climate, is the mule. On the fertile plains, especially in Tennessee and Kentucky, there are stock farms where particular attention is paid to raising mules and fine breeds of horses.

Kentucky is famous for its fine stock, especially horses and mules, raised in the "Blue Grass Region" about LEXINGTON. The grass here has a bluish color, and is very nourishing, suited for the raising of stock.

The reason why this grass is so nourishing is that the soil in this section is made of bits

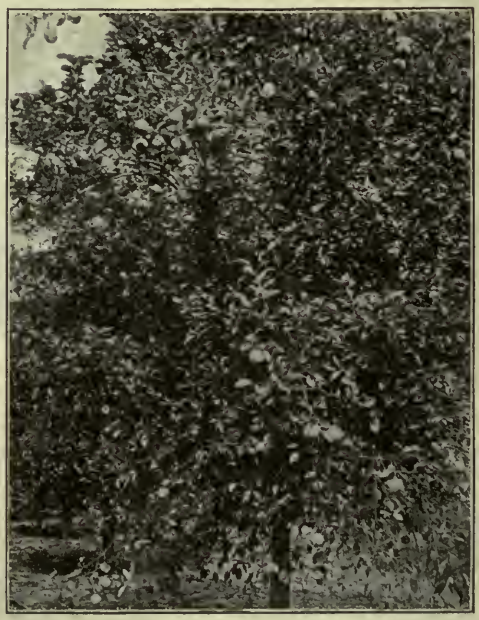

FIG. 207. — An orange tree, loaded with fruit, in a Florida orange grove.

of decayed limestone in which there is lime phosphate, an excellent plant food. This phosphate comes from the shells of small animals

which lived in the sea that once covered this region. Dying, they helped to make a deposit of sediment on the sea bottom. This sediment has since changed to limestone rock, which is now raised above the sea. As the limestone decays, the phosphate mixes with other rock bits, and thus fertilizes the soil.

Because of the abundance of limestone in this part of Kentucky, numerous caves are found there. These caves are long tunnels that have been slowly eaten out by water that percolates through the rock, dissolving the limestone. The largest of all is the *Mammoth Cave*, which is said to have more than one hundred and fifty miles of tunnels, or galleries. These wind about in an irregular manner, some being many feet below others, and all together forming a network, or *labyrinth*, into which a stranger dares not venture without a guide.

In the western part of Texas, particularly in the north, where there is little rainfall, grazing is the chief industry. The climate is so dry that the grass cures, and becomes hay, while still upon the ground, making excellent feed for cattle (Fig. 208) and sheep. One may travel for miles over the plains of western Texas, seeing little else than a ranch house here and there, with now and then a herd of cattle or sheep, and cowboys riding to and fro.

There is no reason for large cities here, and the life of the cowboys and sheep herders is a lonely one. It is their work that helps to supply our tables with meat, and to give us our woolen clothing and our shoes. Explain how hundreds of New England families depend for their daily meat upon the products of these distant, lonely ranches. How much people depend upon one another!

FIG. 208. — Cattle grazing on the broad plains of western Texas.

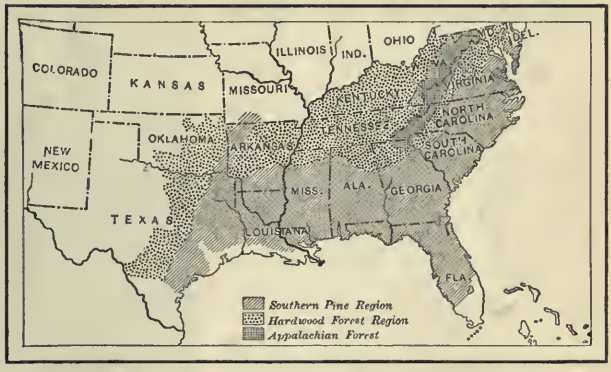

FIG. 209. — The forest regions of the Southern States.

Figure 209 shows how extensive the forests are in the Southern States. Not

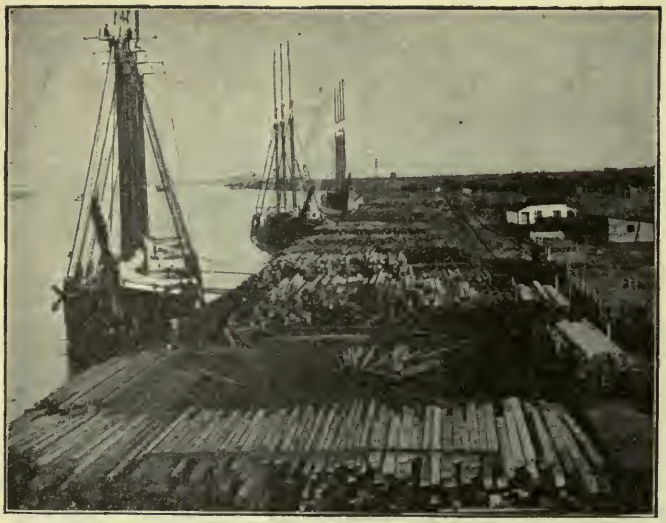

FIG. 210. — A view on the water front at Savannah, where much lumber is shipped.

Lumbering

1. Extent of forests; kinds of trees

all the land, however, marked as forest on this map is covered with woods. Farming is a very great industry in these regions. The map is intended to show merely that *much timber* grows in all these states. As a matter of fact, about twice as much land is covered with forest as is taken up by farms.

There is a great amount of hard pine — often called Georgia pine — on the Coastal Plains. This timber is sent to all the cities of the North. It is shipped from the coastal cities of CHARLESTON, S.C., SAVANNAH and BRUNSWICK, Ga., JACKSONVILLE and PENSACOLA, Fla., and MOBILE, Ala., as well as from other seaports. On the higher lands such hardwoods as oak and hickory thrive (Fig. 211). In which states are these higher lands found? Quantities of hardwood are shipped from MEMPHIS and from other points. Name some of the uses to which these different kinds of wood are put. Nearly one half of all the timber now cut in the United States comes from the South.

2. Method of lumbering

The method of lumbering in the South is very different from that of the Northeastern States (p. 118). In the South there are no heavy snows to level the uneven ground and to cause floods in the streams. Therefore, logs cannot be floated down to the tidewater by means of spring freshets. On this account the sawmills are located in the midst of the forests, if possible on the river banks. To them the logs are brought, either by water, by wagon, or by train (Fig. 212), and then are sawed into lumber.

Fishing

1. Kinds of fishing

There is much fishing here, as in New England, but the kinds of fish are different. Cod and halibut are not found, because they live only in the colder waters. There are, however, other kinds of food fish, among the

FIG. 211. — Lumbermen at work cutting hardwood logs in the mountains of western North Carolina.

most valuable being oysters, shad, and bluefish; and in southern Florida there are sponge and turtle fishing. The sponge grows in the warm, shallow waters of the coral reefs, and the immense sea turtles swim about on the surface of the ocean. The alligator, whose skin is made into a valuable leather, also is found in Florida, but is becoming scarce.

FIG. 212. — Lumbermen loading logs on a train in the forest of eastern North Carolina.

2. The oyster industry

Oysters are found in the bays all the way from Cape Cod to the Rio Grande; but one of the best places for them is Chesapeake Bay, where the waters are warm, shallow, and quiet. From this broad, branching bay they are collected in great quantities, some being shipped away fresh in the shell, while many are canned, like fruit. BALTIMORE and NORFOLK are especially noted for this industry.

When young, the oysters swim freely about; but after reaching a certain age, they sink to the bottom, fasten themselves to some solid substance, as a stone or an oyster shell, and never afterwards move from that spot. They depend for food upon what is brought to their mouths by the tidal currents. Sometimes they can be picked up by hand from a boat; but usually the water is so deep that they must be dragged, or *dredged*, up with a long-handled rake. Steamers and sailing boats are used for this purpose.

Oysters thrive so well in these warm Southern waters, and they are so highly prized for food, that the culture of oysters is given careful attention. There are many "oyster farms"; that is, patches of shallow water in which young oysters are planted, as seeds are planted in a garden, to be gathered when they have grown to full size. These "farms" are fenced in by stakes, and are owned and cared for as carefully as ordinary farms are.

FIG. 213. — The coalfields of the Southern States.

Growth of the South

From what has been said, you can see that *farming* and *lumbering* are among the leading industries of the South. Yet neither of these requires a dense population, or causes the growth of large cities. From this it is clear why people are more scattered in the Southern than in the Northeastern States.

Of late years, however, other industries have been rapidly developing in the South; the population has been increasing very fast, and seems likely to increase much more in the near future.

Mining is one of the occupations that

have been rapidly developing, and many valuable minerals are found. Among these minerals the most important is soft or bituminous coal, which is mined in large quantities. The states where this coal is found are shown on the map (Fig. 213). What are their names? Note also what states have lignite, or brown coal. This is not so good as the bituminous coal, but is of much value. One fourth of the coal of the country now comes from these states.

Mining
1. Coal

Iron ore is mined in several of the Southern States, especially Tennessee and Alabama; but Alabama supplies nearly as much as all the others together. Only two other states in the country, Minnesota and Michigan, produce more iron ore than Alabama. The most noted mining region in the South is that around BIRMINGHAM, Ala., near the southern end of the Appalachian system. Here iron ore, coal, and limestone, the three materials necessary for the production of iron and steel (p. 128), are found very close together.

2. Iron ore

There is not much natural gas produced in the Southern States, though it is found in several of them. The greatest quantity comes from Oklahoma. Petroleum, however, is of very great importance. Vast quantities have been found in Texas and in Louisiana, near the Gulf of Mexico, and this is now one of the most noted oil regions in the world. Millions of barrels of oil are produced there every year. Much is also found in West Virginia, in Oklahoma, and some in Tennessee.

3. Oil and gas

FIG. 214. — A marble quarry near Knoxville, Tennessee.

There are valuable deposits of granite in several of the states, especially North and South Carolina, Georgia, Arkansas, and Texas. Excellent sandstone for building, and limestone for various uses, are also widely distributed. Among the important uses of the limestone here, as in the North, is the manufacture of Portland cement (p. 131).

4. Building stones and clays

There is much beautiful marble in Texas, Georgia, and Tennessee. The Georgia marble is widely known for its great beauty; and near KNOXVILLE, in eastern Tennessee, marble of different colors is quarried (Fig. 214). What city in Vermont is likewise noted for marble (p. 123)?

Clays of fine quality for bricks, tiles, etc., are found in many places.

The soil of farms often becomes worn out and needs a fertilizer. There are va-

rious kinds of fertilizers, such as manure and bone dust, which furnish the plant food needed by crops; but one of the most important kinds is *mineral phosphate*. This is found in great quantities in Florida, Tennessee, and South Carolina; and from these states much phosphate is now obtained. Besides being used in the South, it is shipped from CHARLESTON, JACKSONVILLE, and TAMPA for use on farms in the North.

5. Phosphates

The phosphate is composed largely of the fossil remains of animals, such as the teeth of sharks, and the bones and teeth of larger land animals that lived in this country in former ages.

The South produces a variety of other minerals. Salt, for instance, is obtained in Texas and Louisiana. Bauxite, the mineral from which aluminum is made, is found in Georgia, Alabama, and Arkansas. Gold is mined in North and South Carolina, Georgia, and Alabama; silver in Texas and Tennessee; and copper in Tennessee. Some precious stones, such as the sapphire and the diamond, are also found. The South is, therefore, a rich mineral region, and mining is rapidly growing in importance.

6. Other mineral products

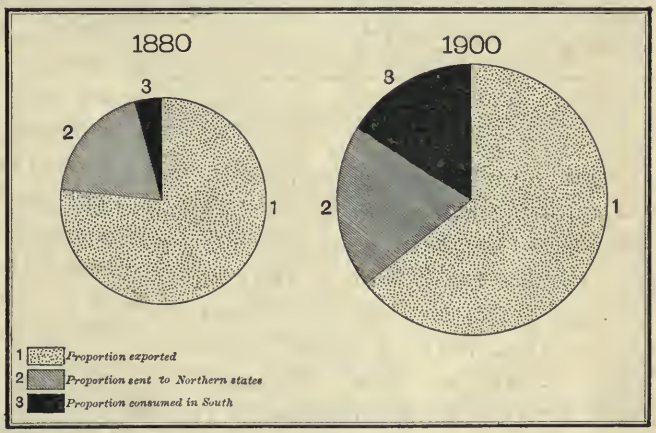

FIG. 215.—Diagram to show what was done with the Southern cotton in 1900, as compared with 1880.

Before the Civil War there was little manufacturing in the South. The negroes, who did most of the hand labor, lacked the training necessary to handle machinery. The raw materials were shipped away, and the manufactured articles were brought back. Thus cotton went to England, New England, and elsewhere, some of it to be returned in the form of cloth; and lumber was shipped to various Northern cities, often to be sent back in the form of furniture. Very little iron ore or coal was mined in those days.

Manufacturing

1. Great advances in this industry

The situation is now greatly changed. Indeed, the advance made in manufacturing since the Civil War has been wonderful. This is shown in Figure 215, for a single one of the products of the South. Explain this figure.

There are so many valuable raw products in the South, that there are great opportunities for manufacturing. Among these products are cotton, sugar cane, corn, wheat, cattle, sheep, lumber, and iron ore. There is also an abundance of coal for power, and there are many rivers and mountain streams that can furnish water power.

2. Conditions favorable to manufacturing

In some cities there are many cotton mills; for example, in CHARLOTTE, N.C., there are twenty-three, and in and near SPARTANBURG, S.C., thirty-seven. In many other towns there are one or two. From Danville, Va., to Atlanta, Ga., cotton mills are very numerous, and there are others

3. Cotton manufacturing

(1) *Extent of cotton manufacturing, and leading centers*

throughout the cotton belt. Indeed, the Piedmont Plateau has become one of the greatest cotton manufacturing sections in the world. The map (Fig. 216) shows the distribution of these mills in a number of the Southern States.

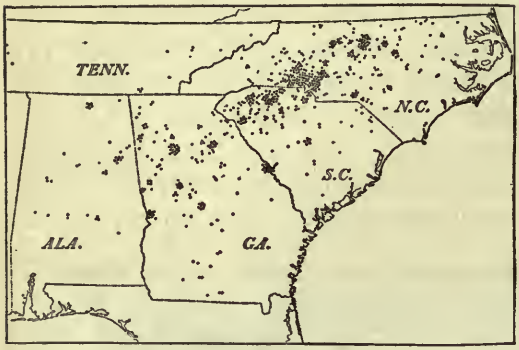

FIG. 216. — A map to show the extent of cotton manufacturing in the South. Each dot represents one mill.

While hundreds of Southern cities and towns now manufacture cotton cloth and cottonseed oil, CHARLOTTE, N.C., COLUMBIA, GREENVILLE, and SPARTANBURG, S.C., and AUGUSTA, COLUMBUS, and ATLANTA, Ga., lead in these industries. What cities in New England are noted for cotton manufacture (p. 131)? Where does their raw cotton come from?

(2) *Meaning of a "mill"*

The following facts from an Alabama cotton mill give some idea of the size and output of these mills. This particular mill employs 600 hands, including men, women, boys, and girls, and pays them about $2000 a week in wages. Every day this mill consumes 15 bales of cotton, each weighing about 500 pounds. Since the average yield per acre of land is about 250 pounds, you can easily figure out how many acres of cotton are required in one year to supply this single mill.

In this mill, as in many others, white people are employed to do the work. While many of the mills are in cities, others are in the country; and there villages have sprung up near the mills. Some of these new villages are already so large that they have their own schoolhouses and churches.

(3) *Value of the cotton gin*

In the early days the cotton seeds were slowly picked out of the cotton by hand and thrown away. Whitney's invention of the cotton gin, in 1793, made it possible for one laborer to separate as much as a thousand pounds from the seed in the same time that five or six pounds could be cleaned by hand. That, of course, made cotton raising far more profitable, and led the planters to raise more.

(4) *Value of cotton seed*

The seeds have also been found to be of value, and are no longer thrown away. Oil is pressed out of them, which is used in making soap, imitation lard and butter, and a substitute for olive oil. There are from two to three pounds of seed to one pound of cotton, and since, on the average, one acre produces two hundred and fifty pounds of cotton, the value of the cotton seed from a large plantation is not small. The part of the seed

FIG. 217. — A cotton mill at Huntsville, Alabama. There are many others as large as this, and many, also, that are even larger.

that is left, after the oil is pressed out, has been found to be an excellent food for cattle, and a good fertilizer. Thus the cotton plant now produces two valuable substances besides the cotton fiber.

4. Manufacture of iron and steel goods

Birmingham has developed such extensive iron manufacturing that it is often called the "Pittsburg of the South." What special advantages has it (p. 160)? In and near this city, as at Pittsburg, the iron ore is reduced to iron in blast furnaces (p. 128) and then manufactured into steel and various other useful articles.

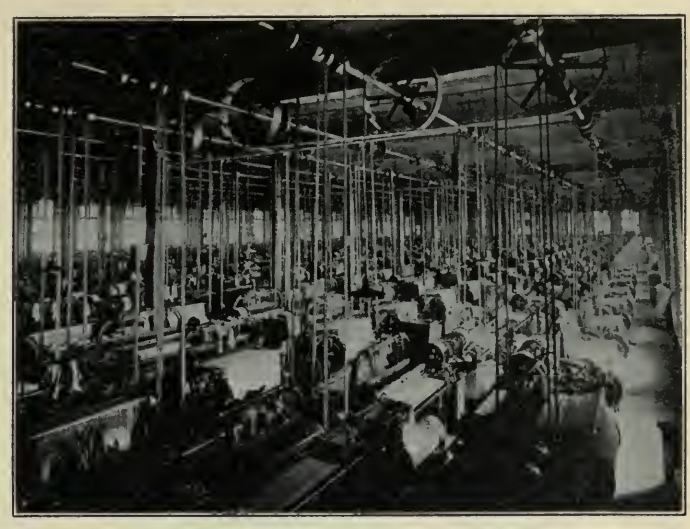

Fig. 218. — Interior of a cotton mill in the South. There are scores of machines, each one weaving the cotton fiber into cloth.

Baltimore, in Maryland, and Wilmington, in Delaware, are likewise important in this industry. To each of these cities both coal and iron can be easily shipped. Baltimore makes many kinds of iron goods; Wilmington is noted especially for the manufacture of cars, heavy machinery, and ships.

Other centers of iron manufacture are Richmond, in Virginia; Wheeling, in West Virginia; Atlanta and Rome, in Georgia; Louisville, in Kentucky; and Knoxville, Chattanooga, and other cities in Tennessee.

5. Manufactures from the forest

Although much of the pine, oak, and other lumber is sent North, a great deal of it is made into doors, blinds, furniture, etc., at factories in Macon, Montgomery, Mobile, Chattanooga, Memphis, Little Rock, and Atlanta (Fig. 220). Locate each of these cities.

Fig. 219. — A Southern cotton mill at nighttime. Power is obtained from the river.

HIGH POINT, in North Carolina, "the Grand Rapids of the South," is now one of the most noted furniture manufacturing centers of the Southern States, although a few years ago it was hardly known. There are now eighty manufacturing plants there.

The Southern forests are of value in several other ways. From them are obtained *turpentine* and *tannic acid* (p. 132). Turpentine is made from the sap of the long-leafed pine. The bark

FIG. 220.—A planing mill in eastern North Carolina. Notice the great piles of boards in the yard behind the mill.

is cut through near the base of the tree, when the liquid from which turpentine is made oozes forth. Other products from the pine are rosin, tar, and wood alcohol.

6. Other manufactures in the South

Some of the other articles manufactured in the South have already been mentioned; for example, tobacco (p. 155) and sugar (p. 153). In each case the work is confined mainly to the sections from which the raw material comes. Thus, NEW ORLEANS, near the sugar plantations, has large sugar refineries. RALEIGH, DURHAM, and WINSTON-SALEM, in North Carolina, LOUISVILLE, in Kentucky, and LYNCHBURG, DANVILLE, and RICHMOND, in Virginia, manufacture tobacco.

KEY WEST, on a small coral key south of the Florida peninsula, is also noted for its tobacco factories. It is so near Cuba that the Havana tobacco, so much prized by cigar smokers, is easily obtained. There is also cigar manufacturing at TAMPA. Why there? Besides the articles mentioned, the South makes a great variety of other goods from the products of the farm, ranch, forest, and mine.

Transportation

1. Harbors

The irregular coast line of parts of the Southern States suggests that there are many harbors there. Good harbors are especially numerous in the northern part. Observe how far the waters of Chesapeake and Delaware bays extend into the land. The cities of BALTIMORE and WILMINGTON, on these bays, have much the same advantages for shipping goods that Philadelphia has. NORFOLK and RICHMOND, in Virginia, are also good shipping points.

Farther south, although the water in some of the bays is shallow, and sand bars are common, there are many good harbors; and the United States government is spending much money in deepening and improving others, so that the largest ships may enter them.

2. Rivers

The commerce of the states bordering the Gulf of Mexico is greatly aided by the Mississippi River. This mighty stream, together with its tributaries, drains a vast area, inhabited by millions of people. Name the principal tributaries, and trace them to their sources. On Figure 402 note how far up these rivers boats can go. Since transportation of goods is cheapest by water, a large amount of freight is sent up and down these waterways (Fig. 226). No wonder, therefore, that the United States government is

spending large sums of money in improving them.

In addition to the waterways, there are railways connecting all important points in these states, and reaching out to all parts of our country. These carry great quantities of freight, as well as many passengers. Among the most important railroads are the Southern, the Southern Pacific, the Louisville and Nashville, and the Baltimore and Ohio.

3. Railroads

The principal cities in the South, as in the North, are those that have grown up at the best shipping points, or at points most favorable to manufacturing.

Principal cities

BALTIMORE, the largest of all, is the seventh city in size in the United States, having over half a million inhabitants. It has an excellent harbor, far inland, in the fertile state of Maryland, near the head of Chesapeake Bay. Coal and iron can easily reach it from Pennsylvania, Maryland, and West Virginia; and, like New York and Philadelphia, it has a large amount of manufacturing and commerce. It is further noted as a center of oyster fishing and shipping. Baltimore, besides being one of our busiest, is also one of our most beautiful, cities.

1. Baltimore

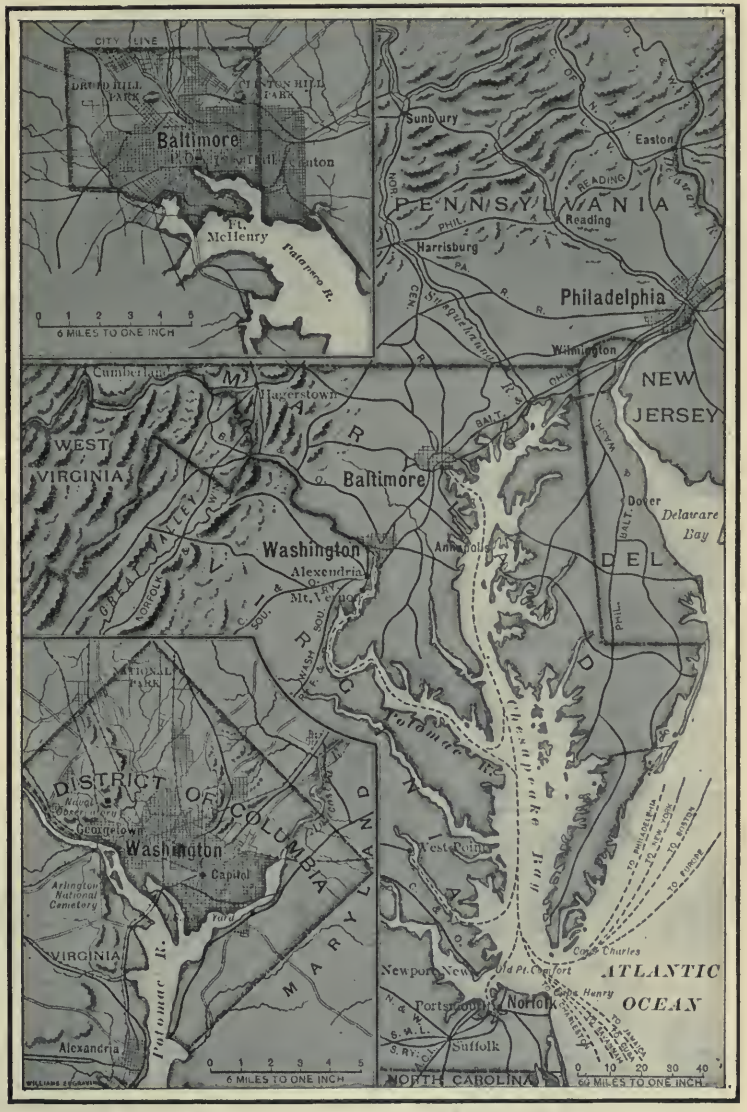

FIG. 221. — Map to show the location of Baltimore and Washington.

A few miles south of Baltimore, at ANNAPOLIS, is the United States Naval Academy, which prepares officers for the navy, as West Point prepares them for the army.

FIG. 222. — Pennsylvania Avenue, in Washington, showing the Capitol at the farther end.

2. Washington

Southwest of Baltimore, on the Potomac River, is the District of Columbia, where WASHINGTON, our national capital (Fig. 221), is situated. This site was chosen for the capital long ago, when it was near the center of the settled part of the country. On Figure 367 you will find a star showing where that center is now. The District of Columbia does not form a part of any state, but is controlled directly by the national government.

Washington is unlike other cities in two respects. In the first place, since it was certain that it would one day be very large, it was carefully planned, with wide streets and many parks. For that reason it is more beautiful than most cities. In the second place, the people, unlike those of other large cities, are not chiefly interested in manufacturing and commerce. Here reside the President and his cabinet, members of Congress, and the foreign ambassadors and other representatives of the great nations of the world. Besides these there are many thousands of men and women at work in the different departments of the government. The chief buildings, therefore, are not factories and private offices, but government buildings (Fig. 223).

WILMINGTON, on the Delaware River, is the largest city in Delaware. Explain the advantage of its location. Like

FIG 223. — The National Capitol Building at Washington.

Camden, New Jersey, it should be associated with Philadelphia as an important manufacturing center. (See p. 142.)

3. Wilmington

The mouth of Chesapeake Bay has already been referred to as the site of important harbors. The principal city at this point is NORFOLK, a manufacturing and shipping center for cotton, lumber, iron, and other products. It is one of the leading Southern ports, and has been advancing rapidly. Near by are other important ports. Name two.

4. Cities of Virginia

The winter climate in this section is so mild that many people from the North go there for the winter season. Norfolk, Newport News, and Old Point Comfort are popular winter resorts.

The largest city of Virginia is RICHMOND, the capital of the state, at the head of tidewater on the James River. It is important as a tobacco market, and as a rapidly growing manufacturing center. What other important cities of Virginia have already been named?

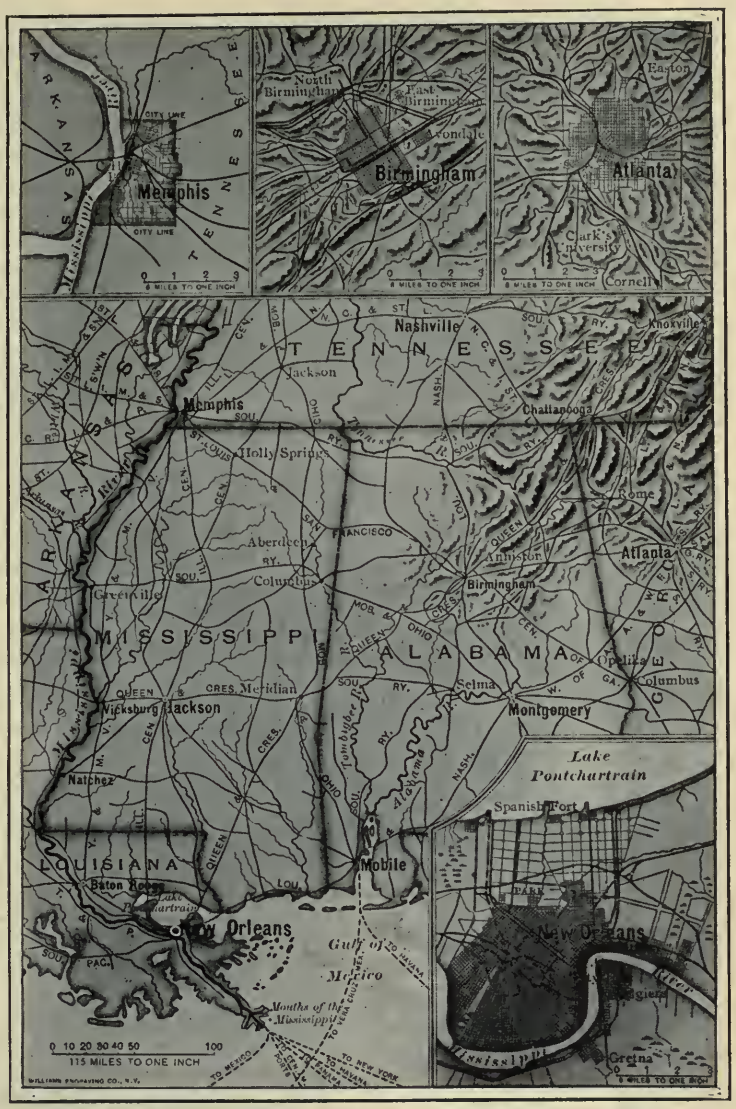

FIG. 224. — Map to show location of New Orleans, Memphis, Birmingham, and Atlanta.

Among Southern cities, the one next to Baltimore in size is NEW ORLEANS, on the Mississippi River about one hundred miles above its mouth. At this point the Mississippi makes a great bend in the form of a half circle, which explains the name *Crescent City*, commonly given to New Orleans.

5. New Orleans

(1) *Its size and location*

Large ocean vessels can reach this

By courtesy of Mississippi River Commission.

FIG. 225. — The embankment, or levee, along the Mississippi, built to prevent the river from overflowing the flood plain.

below the level of the river. In fact, from Memphis southward, a large part of the land on either side of the Mississippi is a low flood plain, spreading out for many miles, and often threatened with floods. The mighty river, receiving tributaries from regions thousands of miles apart, is charged with yellow mud, which gradually sinks to the bottom as the current becomes slower toward the mouth. This has built up the bed of the river, so that at high water the floods would spread out over the low land if they were not shut in by strong walls of earth, called *levees* (Fig. 225).

(3) *Difficulties caused by the river*

In spite of their strength, these embankments sometimes give way, especially in the springtime, when the snows are melting in the North; then the destruction to life and property is appalling. At such times hundreds of men patrol the levees, night and day, to check the slightest leak. Even a hole made by crawfish may be the beginning of a destructive flood.

Because the land near the river is so low, the soil on which New Orleans stands is very damp. Indeed, in digging foundations for buildings, water is reached a short distance below the surface. On that account it has been difficult to

port, and river boats (Fig. 226) can travel from it as far up as Pittsburg on the Ohio River, and a great distance, also, up the Mississippi and Missouri rivers. On Figure 138 measure the distance from New Orleans to Pittsburg. To St. Paul. To Kansas City. How do these distances compare with those from New York to Chicago and to Duluth? Also, how far apart are Pittsburg and Kansas City? Much of the country between these cities is within easy reach of the Mississippi or some of its branches.

(2) *Its connection by water and rail*

Like New York, New Orleans is connected with the interior of the country by rail as well as by water. The Illinois Central Railway extends all the way to Chicago, running parallel to the river for much of the distance; the Louisville and Nashville reaches Louisville, St. Louis, and other cities; and the Southern Railway runs from Washington to Atlanta, with connections to New Orleans; and thence the Southern Pacific Railway extends westward, across Texas, to California.

Much of the land on which New Orleans is built is frequently

FIG. 226. — Loading Mississippi River boats from the levee.

provide proper drainage. A system of drainage and sewerage has, however, been established at great expense.

(4) *People, and climate of the city*

New Orleans once belonged to France (p. 101), and one person in six in the city is of French stock. French is still spoken by some of these.

Frost seldom reaches this city, and the midwinter weather is rarely colder than the early autumn of the North. What must be the effect of this climate upon the style of houses? Also upon the presence of birds, flowers, and fruits in winter?

6. Other cities on the Mississippi River and tributaries

(1) *Louisville and Memphis*

Far up on the Ohio River is LOUISVILLE, the fourth city in size in the Southern States, and the largest in Kentucky. There are rapids in the river at this point, but a canal leads around them. Louisville is a leading center for tobacco manufacture and trade, as well as for the manufacture of iron goods and other articles.

On the Mississippi River, midway between New Orleans and Louisville, is MEMPHIS, the largest city in Tennessee. It is in the midst of the cotton and hardwood sections, and is noted for its cotton and lumber trade. It is situated on a high bluff, with the Mississippi River at its base. Give reasons why that is a favorable location.

(2) *Nashville, Knoxville, and Chattanooga*

NASHVILLE, the capital of Tennessee, has sawmills, furniture factories, and flour mills. There are more than six hundred factories in this city. Being in the midst of a splendid farming country, it is a distributing point for supplies to the surrounding towns and farms. It is also one of the educational centers of the South.

CHATTANOOGA is situated on the rugged plateau west of the Appalachians. It is on the Tennessee River (Fig. 227), at a point which makes it an important gateway. There is much manufacturing here, especially of articles made of iron and wood. Another busy manufacturing city, near by, is KNOXVILLE, which is a little smaller than CHATTANOOGA.

FIG. 227. — Moccasin Bend in the Tennessee River, as seen from Lookout Mountain. Chattanooga is situated on the river bank just to the right of the middle of the picture.

Find BATON ROUGE, in Louisiana; VICKSBURG and JACKSON, in Mississippi; LITTLE ROCK, in Arkansas; and GUTHRIE, in Oklahoma. These are all centers of trade in the states where they are situated. Which of them are state capitals?

(3) *Other cities*

ATLANTA (Fig. 228), the "Gate City," is one of the few large cities not located upon a water route. Northeast of it, for over three hundred and fifty miles, there is no easy pass across the mountains, and until 1880, in all that distance, no railway crossed the Appalachian Mountains.

7. Atlanta

FIG. 228. — A view of Atlanta.

Near Atlanta, however, there is a good route; and railways reaching westward from the Carolinas, or northern Georgia, come together here, making Atlanta a great railway center.

Owing to its favorable situation as a railway shipping point, Atlanta is the leading interior wholesale market of the South; and it surpasses all Southern cities in the number and variety of its manufactures. Among its factories are lumber, cotton, and iron mills. It is one of the most progressive cities in the country, and, like other Southern cities, is growing rapidly.

The coast cities are engaged chiefly in shipping cotton and lumber, and most of them are located near the mouths of rivers, so that these goods may be brought to them by water as well as by rail. In them, also, there is important manufacturing, especially of cotton goods and lumber. Two of the best-known seaports are CHARLESTON and SAVANNAH, both long noted as shipping points for cotton (Fig 229), lumber (Fig. 210), and other goods. Charleston is the leading lumber port in the South. MOBILE, on Mobile Bay, is another important Southern port.

8. Seaports east of the Mississippi

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FIG. 229. — Thousands of bales of cotton on one of the wharves at Savannah, ready for shipment.

In Florida are TAMPA and PENSACOLA, both with ex-

cellent harbors, and both rapidly growing. Besides its cigar manufacturing (p. 164), Tampa has a growing trade with the West Indies. It is the terminus of important railways, and is the nearest port in the country to the Panama Canal. When this canal is finished, Tampa, Pensacola and other Southern seaports will no doubt have a still greater trade.

FIG. 230. — Even the small streams and canals are used for shipping freight. Here, for example, are six thousand bales of cotton on a barge in the Houston Canal, in Texas, bound for the seacoast, to be placed on vessels for shipment to England.

GALVESTON ranks third in importance among the seaports of the Southern States; only Baltimore and New Orleans have more shipping. It is the outlet for a great amount of cotton and other goods produced north and west of it. HOUSTON, DALLAS, FORT WORTH, SAN ANTONIO, and AUSTIN are other leading cities of Texas. Locate EL PASO, the leading city in western Texas.

9. Other cities west of the Mississippi River

Oklahoma, one of our newest states, includes what was formerly called Indian Territory, a region reserved as the home of several Indian tribes. It is a state of splendid resources, and as soon as the government opened the land to settlement by white men, large numbers of settlers went there. Within a few years so many people have made their homes in Oklahoma that it has been changed from a territory to a state. It already has three thriving cities, — GUTHRIE, OKLAHOMA, and SHAWNEE; and there are other rapidly growing towns. Which is the capital?

FIG. 231. — A view of Oklahoma City as it appeared April 22, 1889.

1. What states are included in this group?
2. What can you say about their area and pop-

FIG. 232. — A view of a part of Oklahoma City in 1908.

Review Questions

ulation? 3. Name and locate the principal mountains. 4. State the principal facts about the Coastal Plains. 5. The Piedmont Plateau. 6. The Fall Line. 7. The other plains found in these states. 8. The coast line. 9. Describe the climate. 10. How does agriculture rank in comparison with the other industries? 11. Give facts showing the importance of the cotton crop. 12. What is the method of raising and marketing it? 13. Tell about the sugar industry. 14. Rice. 15. Tobacco. 16. Other farm products. 17. Ranching. 18. Lumbering. 19. Kinds of fishing. 20. The oyster industry. 21. What about coal mining? 22. The production of iron ore? 23. Oil and natural gas? 24. Building stones and clays? 35. Phosphates? 26. State the advances recently made in manufacturing. 27. How are conditions very favorable to manufacturing? 28. Show the extent of cotton manufacture. 29. Explain the value of the cotton gin; of the cotton seed. 30. Give some idea of the importance of iron and steel manufacture, and name some of the principal centers for such work. 31. State similar facts in regard to manufactures from the forest. 32. Name and locate other kinds of manufacturing in these states. 33. What advantages does the South enjoy for transportation of goods? 34. Recall the leading facts about Baltimore. 35. Washington. 36. Wilmington. 37. Cities of Virginia. 38. New Orleans. 39. Louisville and Memphis. 40. Nashville, Knoxville, and Chattanooga. 41. Other cities on the Mississippi and its tributaries. 42. Atlanta. 43. Seaports east of the Mississippi River. 44. Other cities west of the Mississippi River.

Review Questions by States

Delaware (Del.) 1. Which is the principal city in this state? 2. For what is it noted? 3. Why is it especially well situated for that industry? 4. Compare it with Albany in size. 5. The principal industries of the state are fruit raising and farming. What two reasons can you give for this fact?

Maryland (Md.). 6. In which section is farming most important? Why? 7. What products can you expect from the mountains? Why? 8. Notice how branching Chesapeake Bay is. Why is it so irregular? 9. What influence must this have upon the number of oysters found there? 10. Why is Baltimore favorably situated for receiving coal and iron from Pennsylvania? 11. For canning fruit, vegetables, and oysters? 12. What might be the effect upon the growth of Baltimore if the land should rise, so that Chesapeake Bay disappeared and the Susquehanna flowed through it? 13. Compare the size of Baltimore with that of Boston.

Virginia (Va.). 14. In what other state was the capital the most important city? 15. Locate the fertile Great Valley that is found in Virginia (Fig. 221). 16. What kinds of agriculture are carried on here? 17. What river separates Virginia from Maryland? What river crosses the middle of Virginia? 18. Compare Richmond in size with Albany. 19. How does Virginia rank in iron production (Fig. 393)? 20. Of what importance are the branching bays that enter Virginia? 21. If goods are to be shipped across the ocean from Kentucky (see map, Fig. 138), is it nearer to send them to Norfolk or to New York?

West Virginia (W. Va.). 22. What disadvantage is it to this state that it has no seacoast? 23. How could we reach the ocean by water from West Virginia? 24. Where is the largest city? Why there? 25. How does this city compare in size with Pittsburg? 26. Should you expect to find much forest in this state? Why? 27. Much farming? 28. Coal, iron, petroleum, and natural gas are found here. Of what value are these?

North Carolina (N.C.). 29. Which part is mountainous? Name and locate the highest peak east of the Mississippi River. 30. What are the surface features of this state? 31. Which cities are mentioned in the text? Where is each? For what is each important? 32. What capes do you find on the coast? 33. What are the leading industries? (See Figs. 371–397.)

South Carolina (S.C.). 34. Describe the surface features of the state. 35. What are the principal industries? 36. What city is on the Fall Line? On the seacoast? For what is each important? 37. Which city is largest?

Georgia (Ga.). 38. Where are the mountains? 39. The plains? 40. What are the industries? 41. Trace the Fall Line across the state (Fig. 196). What cities are on it? 42. Why is Atlanta situated where it is? 43. How does it compare in size with the largest city in each of the three states just mentioned? 44. How does it compare in size with

New Orleans, Buffalo, and Providence? 45. Name the two seaports. What do they ship?

Florida (Fla.). 46. What about the relief of this state? 47. Explain the irregular southern coast and the Florida Keys. 48. Describe the climate. How does this influence the crops? 49. What Florida cities were mentioned, and how is each important? Locate each. 50. What mineral product comes from Florida?

Alabama (Ala.). 51. Trace the Fall Line across this state. What cities are situated on it? 52. Where is Mobile? How is it important? 53. Describe the location and industries of Birmingham. 54. What crops are raised in Alabama? 55. What cities are engaged in manufacturing cotton? 56. In lumber manufacturing? 57. Compare Mobile in size with Atlanta and Birmingham.

Mississippi (Miss.). 58. Why is there no city on the coast? 59. In what way can the products of the state be shipped by water? 60. From what cities? 61. What are the products? 62. Why no mining? 63. What about the extent of cotton raising in this state (Figs. 375, 376)?

Louisiana (La.). 64. State the reasons for the great importance of New Orleans. 65. Why has it a better location than Mobile or Charleston? 66. Compare it in size with those cities. 67. With Boston and Baltimore. 68. What large tributary enters the Mississippi in Louisiana? 69. What crops are raised in Louisiana? Why there?

Texas (Tex.). 70. Where are the mountains? 71. Where are the forests? Why there? 72. What are the industries on the western plains? 73. What city lies in the western part? Why there? 74. What cities are in eastern Texas? 75. For what is Galveston noted? 76. Compare it in size with New Orleans and Charleston. 77. Texas is how many times as large as Pennsylvania? (For area, see table in Appendix.) 78. Add together the areas of all the Northeastern States, and compare the total with the area of Texas. 79. Compare the population of Texas with that of Massachusetts. (See Appendix.)

Oklahoma (Okla.). 80. What about the climate of the western part? 81. What crops are raised here? 82. Into what river does the state drain? 83. Name and locate the chief cities.

Arkansas (Ark.). 84. What large river enters the Mississippi in this state? 85. There is much forest in Arkansas; in what part (Fig. 209)? 86. Is Arkansas in the cotton belt? (See Fig. 201.) 87. The capital is the largest city. Compare it in size with Memphis. Why is it less favorably situated than that city?

Tennessee (Tenn.). 88. Where are the mountains? The plains? 89. Name two cities among the mountains. For what is each important? 90. State facts about two other cities in Tennessee. 91. Which city is the largest? (See Appendix.) 92. What large rivers drain the state? 93. What are the leading industries in this state?

Kentucky (Ky.). 94. Why should this state be better adapted to tobacco raising than Ohio? 95. Of what importance is the limestone of Kentucky? 96. Where are most of the cities? Why there? 97. What products from Kentucky are mentioned? 98. Which is the largest city? For what important? 99. What other cities are mentioned?

Suggestions

1. Draw an outline map of these states. Add the principal rivers and cities, and the state boundaries. 2. Represent this group of states in sand, showing the mountains and plains. 3. Make a collection of articles manufactured from cotton, and add them to the school collection. 4. Make a collection of different kinds of wood grown in the Southern States. 5. Raise some cotton and rice in the schoolroom. 6. Name other advantages that the mild climate of the South brings; for instance, in regard to clothing; coal for heating houses; and kinds of houses. Do you see any disadvantages in such a climate? 7. How are the people of New England and those of the South dependent upon each other in the work that they do? 8. What two letters stand for *District of Columbia?* 9. Name and locate the capital of each state in the Southern group. 10. Write the abbreviations for each of these states.

4. The Central States

Map study

1. Name the states in this group. 2. Which of them border on the Great Lakes? 3. Name the Great Lakes. 4. Which of these lakes is highest above the level of the ocean? How can you tell? How does the name of this lake suggest that it lies highest? 5. By what river do the waters of these lakes reach the ocean (Fig. 134)? 6. Remembering what was said about the Erie Canal (p. 136), show how goods can be shipped by water from Duluth and Chicago to New York City. 7. Measure the distance on the map from Duluth to New York City. 8. Name the three principal rivers in the Central States. Trace each. 9. How do these rivers compare in length with the largest in the Northeastern States? 10. Trace the divide between the Mississippi Valley and the valley of the Great Lakes. 11. Which state drains entirely into the Great Lakes? 12. Which states drain mainly into the Ohio River? Into the Mississippi River? Into the Missouri River? 13. Which state drains partly into the Arctic Ocean? 14. Where are mountains found in these states?

Area and population

The area of these twelve states is somewhat smaller than that of the sixteen Southern States just studied, but it is more than four times that of the Northeastern States.

A century ago there were scarcely any people living here, excepting Indians and a few scattered trappers. Now there are more than twenty-six million persons, or more than live in either the Northeastern or the Southern States. There are also many large cities, including Chicago, the second largest in the United States, and St. Louis, the fourth in size.

Let us see what has attracted so many people here, what their chief occupations are, and how these compare with the occupations in the sections already studied.

Agriculture is the most important of these occupations. Indeed, this is one of the best farming sections in all the world. Millions of persons in Europe and in our coast cities look to these states for their bread, meat, and other food, as they look to the South for cotton.

Agriculture
1. Its importance

There are several reasons for this. In the first place, throughout almost the entire section the land is a level plain, or, at most, gently rolling.

2. Conditions favorable to farming
(1) *Great amount of level land*

In western South Dakota and in southern Missouri, low mountains rise above the plains. There is a hilly region around the western end of Lake Superior, in Michigan, Wisconsin, and Minnesota; and in eastern Ohio there is also hilly land, for the Appalachian Plateau extends into this state. What are the names of the mountains of the Central States?

With the exception of these small areas of mountains and hilly lands, most of the region is a vast level tract. This is very different, as you remember, from most of the land of the Northeastern States. The level surface makes it possible to cultivate large tracts of land easily (Fig. 236), as in the Southern States. The soil, also, is very deep and fertile.

In most parts of the Northeastern and of the Southern States forests were once extensive; indeed, there is still much forest left, as we have seen. In many sections of New England weeks of hard labor were required to remove the trees from a single acre, and to drag away or bury the bowlders.

(2) *Absence of forests and bowlders*

Over a large part of the Central States, however, such work was unnecessary, for there were no trees or rocks.


CENTRAL STATES
(WESTERN SECTION)
Scale of Miles
0 25 50 100 150 200 250
Cities with over 1,000,000 CHICAGO
Cities with 500,000 to 1,000,000 St.Louis
Cities with 100,000 to 500,000 St.Paul
Cities with 25,000 to 100,000 Topeka
Smaller Places Canton
Capitals with less than 25,000 JEFFERSON CITY
Capitals ⊙
Other Cities o
Williams Engraving Co., N.Y.
100° Longitude West from Greenwich 95°
105°
100°
95°
90°
45°
40°
35°
DOMINION OF CANADA
NORTH DAKOTA
SOUTH DAKOTA
NEBRASKA
KANSAS
OKLAHOMA
TEXAS
MINNESOTA
IOWA
MISSOURI
ARKANSAS
WISCONSIN
ILLINOIS
MONTANA
WYOMING
COLORADO
MICH.
MISS.
LAKE SUPERIOR
LAKE OF THE WOODS
Bottineau
Langdon
Cando
York
Devils Lake
Park River
Grafton
Rugby
Minot
Williston
Ft.Buford
Lakota
Larimore
Grand Forks
Carrington
Hillsboro
Dickinson
Mandan
BISMARCK
Jamestown
Valley City
Fargo
Casselton
Lisbon
Oakes
Wahpeton
Morden
Emerson
St.Vincent
Aberdeen
Webster
Millbank
Watertown
Redfield
Huron
PIERRE
Rapid City
Deadwood
Hot Springs
Brookings
Flandreau
Madison
Mitchell
Chamberlain
Sioux Falls
Canton
Yankton
Vermillion
Elk Point
Chadron
Alliance
O'Neill
Wayne
Norfolk
Columbus
Sidney
Julesburg
Broken Bow
North Platte
Ord
Omaha
S.Omaha
Fremont
Grand Island
Kearney
York
Lincoln
Plattsmouth
Nebraska City
Hastings
Holdrege
McCook
Geneva
Red Cloud
Beatrice
Fairbury
Colby
Beloit
Concordia
Atchison
Leavenworth
Manhattan
Junction City
Topeka
Kansas City
Lawrence
Salina
Abilene
Ottawa
Emporia
Osawatomie
Garnett
Iola
Great Bend
McPherson
Hutchinson
Garden City
Dodge City
Newton
Chanute
Kingman
Wichita
Ft.Scott
Parsons
Pittsburg
Cherokee
Wellington
Winfield
Cherryvale
Arkansas City
Independence
Galena
Coffeyville
Las Animas
Vinita
Enid
GUTHRIE
Muskogee
Oklahoma City
Chickasha
McAlester
Ardmore
Denison
Sherman
Crookston
Thief River Falls
Bemidji
Grand Rapids
Hibbing
Virginia
Eveleth
Ely
Two Harbors
Duluth
Superior
Cloquet
Thomson
Brainerd
Moorhead
Wadena
Fergus Falls
Alexandria
Sauk Center
Hinckley
Little Falls
St.Cloud
Anoka
Benson
Willmar
Minneapolis
St.Paul
Stillwater
Marshall
Hastings
Red Wing
Faribault
New Ulm
Mankato
Owatonna
St.James
Fairmont
Rochester
Winona
Worthington
Albert Lea
Austin
Laporte
Port Arthur
Ashland
Rhinelander
Antigo
Merrill
Wausau
Chippewa Falls
Eau Claire
Marshfield
Plover
Grand Rapids
Sparta
Tomah
La Crosse
Portage
Baraboo
Madison
Prairie du Chien
Platteville
Monroe
Galena
Freeport
Dixon
Sterling
Moline
Rock Island
Kewanee
Princeton
Galesburg
Monmouth
Peoria
Pekin
Canton
Macomb
Beardstown
Lincoln
Quincy
Jacksonville
Springfield
Litchfield
Alton
Granite City
E.St.Louis
Belleville
Cairo
Ontonagon
Bessemer
Ironwood
Spencer
Le Mars
Cherokee
Sioux City
Mason City
Algona
Decorah
Charles City
Oelwein
Ft.Dodge
Webster City
Cedar Falls
Waterloo
Independence
Dubuque
Boone
Ames
Marshalltown
Cedar Rapids
Clinton
Grinnell
Iowa City
Davenport
Des Moines
Atlantic
Council Bluffs
Oskaloosa
Muscatine
Glenwood
Creston
Albia
Ottumwa
Fairfield
Burlington
Red Oak
Chariton
Clarinda
Centerville
Ft.Madison
Keokuk
Maryville
Albany
Trenton
Kirksville
St.Joseph
Chillicothe
Brookfield
Macon
Hannibal
Lexington
Moberly
Louisiana
Mexico
Independence
Columbia
Boonville
Sedalia
Fulton
St.Charles
Warrensburg
Clinton
JEFFERSON CITY
St.Louis
De Soto
Bonne Terre
Nevada
Lebanon
Salem
Cape Girardeau
Webb City
Carthage
Joplin
Springfield
Aurora
Monett
Westplains
Poplar Bluff
New Madrid
Caruthersville
Eureka Springs
Ft.Smith
Jonesboro
Argenta
Little Rock
Hot Springs
Pine Bluff
Helena
Memphis
Missouri R.
Red R.
Sheyenne R.
James R.
Grand R.
Moreau or Owl R.
Cheyenne R.
Bad R.
White River
Niobrara River
North Platte River
Loup R.
Elkhorn River
Platte River
Republican R.
Smoky Hill River
Arkansas R.
Cimarron
Canadian River
Washita R.
Red River
Mississippi River
Minnesota River
Des Moines R.
Iowa R.
Cedar R.
Osage R.
White River
Black R.
Rainy R.
Red Lake
Mille Lacs
Leech Lake
Lake Itasca
Black Hills
Harney Pk.
Ozark Mts.

FIG. 233.


CENTRAL STATES
(EASTERN SECTION)
Scale of Miles
0 25 50 100 150 200 250
Cities with over 1,000,000 — CHICAGO
Cities with 500,000 to 1,000,000 — Cleveland
Cities with 100,000 to 500,000 — Detroit
Cities with 25,000 to 100,000 — Aurora
Smaller Places — Canton
Capitals with less than 25,000 — FRANKFORT
Capitals ⊙ Other Cities ○
WISCONSIN
ILLINOIS
INDIANA
OHIO
KENTUCKY
TENNESSEE
MICHIGAN
IOWA
MISSOURI
ARKANSAS
MISS.
ALABAMA
GEORGIA
SOUTH CAROLINA
NORTH CAROLINA
VIRGINIA
WEST VIRGINIA
PENN.
NEW YORK
LAKE SUPERIOR
LAKE MICHIGAN
LAKE HURON
LAKE ERIE
LAKE ONTARIO
CANADA
Williams Engraving Co., N.Y.
90° Longitude West from Greenwich 85°
80°

FIG. 233.


PHYSICAL MAP OF THE
CENTRAL STATES
Scale of Miles
0 50 100 150 200 250
KEY
From 2,000 to 8,000 ft.
From 500 to 2,000 ft.
From 100 to 500 ft.
Sea Level
From 0 to 100 ft.
From 0 to 650 ft.
Below 650 ft.
DOMINION OF CANADA
GREAT CENTRAL PLAIN
APPALACHIAN MOUNTAIN REGION
LAKE SUPERIOR
LAKE MICHIGAN
LAKE HURON
LAKE ERIE
LAKE ONTARIO
GREAT LAKES
MISSISSIPPI VALLEY
OZARK MTS.
CUMBERLAND PLATEAU
ALLEGHANY MTS.
BLACK HILLS
TURTLE MTS.
Williams Engraving Co., N.Y.
Longitude West from Greenwich

FIG. 235.

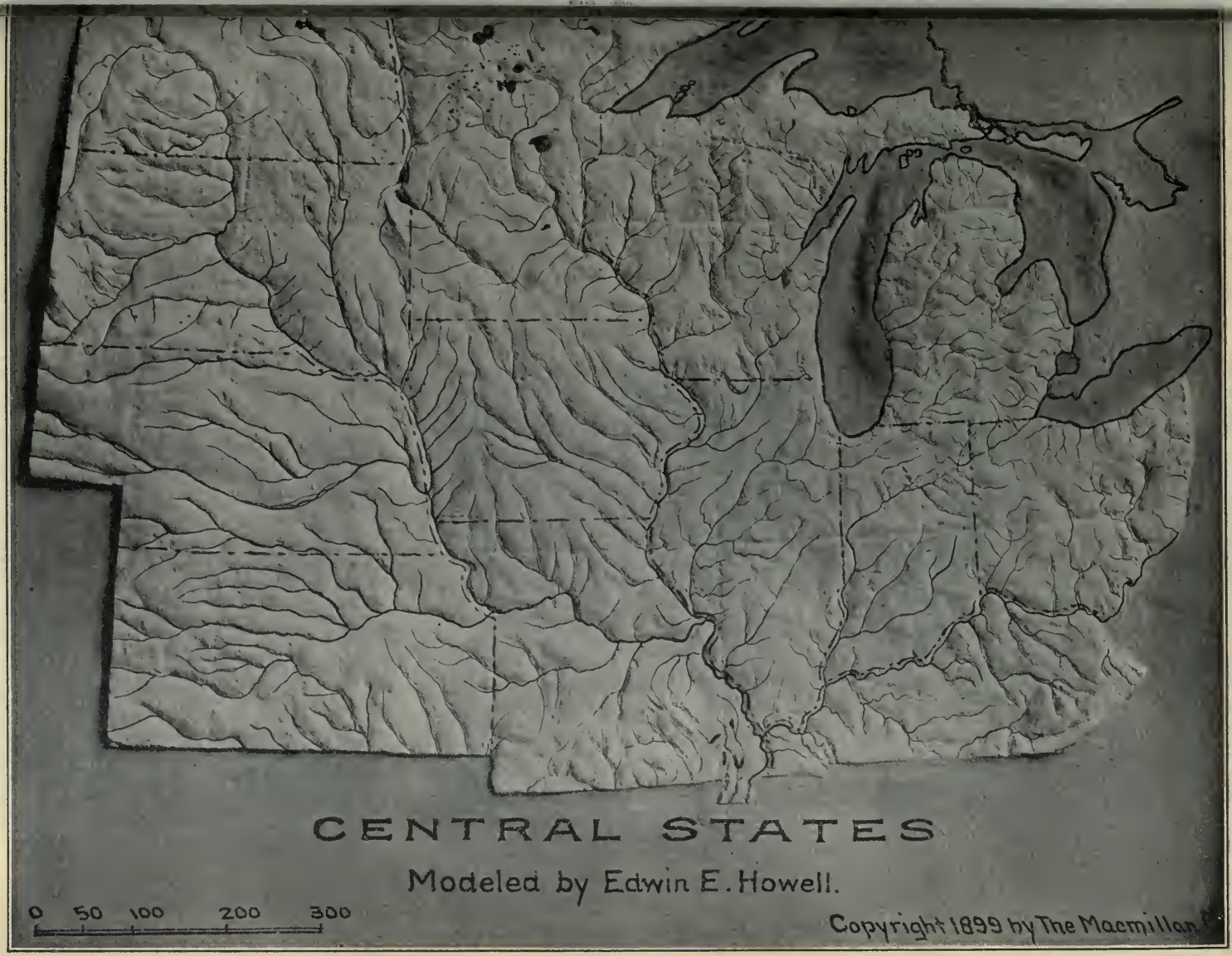

CENTRAL STATES
Modeled by Edwin E. Howell.
0 50 100 200 300
Copyright 1899 by The Macmillan

Fig. 234.

FIG. 236. — The very level, fertile plain in the Red River Valley of North Dakota, one of the finest wheat regions in the world. For hundreds of miles there is just such level land as this.

It was *prairie* land, covered only with luxuriant grass, and all ready for plowing and planting. A good crop could be raised the first season. This fact had much influence in causing the rapid settlement of these states.

(3) *Sufficient heat and rain*

While this section lies north of the states last studied, and has a more severe climate, the summers are long and hot enough to raise many kinds of crops. Also, while the rainfall is less than that farther south (Fig. 408), it is sufficient for farming throughout almost the entire section. This fact is suggested by the great number of rivers. The rain is brought from the Gulf of Mexico and the Atlantic Ocean by the winds which frequently blow from the south and east.

Only on the very western border is there too little rain for agriculture without irrigation. The reason for this lack of rain in the extreme west is that the winds lose most of their moisture before they reach the western part of North and South Dakota, Nebraska, and Kansas. There is, however, enough rain for the growth of nourishing grass for cattle, sheep, and horses.

The farms vary greatly in size, from a few acres to several thousand; but the greater part contain from 80 to 160 acres. In the main, they resemble the one in Ohio that is here described. On this Ohio farm of 160 acres is a house in which the family lives, with a barn near by for horses, milch cows, and hay, and with sheds near it for storing grain and farming implements.

3. A farm in central Ohio

(1) *The house and its surroundings*

FIG. 237. — A farmer feeding his chickens and turkeys.

A windmill in the rear

of the house keeps the milk house well supplied with cold water, and also fills the water troughs in the barnyard. Near the house is an orchard (Fig. 238) of apple, peach, and pear trees, with a few rows of berry bushes in one part, and a chicken house in another (Fig. 237). Here chickens are raised, and supply all the eggs that are needed, with some to sell. On one side of the front yard are a few beehives, and back of them, between the orchard and the barn, is a garden of vegetables. Still back of that are several pigpens, in which hogs are fattened for home use, and also for the market.

Farther away from the house are fields in which at least three or four different kinds of crops are raised. Every farmer in that region expects to raise corn, — perhaps sixty acres of it, — some grass for grazing and for hay, and wheat or some other kind of grain.

(2) *The fields, and what is done with their crops*

Fig. 238. — A farmer and his family in the orchard near the house.

After these crops are harvested, they are either sold or fed to stock — horses, cattle, hogs, or sheep — upon the farm. The latter plan is often followed, chiefly because it pays better to fatten stock and sell it, than to sell the crops themselves. There are generally several good milch cows on the farm, which supply the family not only with fresh milk and butter, but furnish some cream or butter to sell.

Since there are only three houses in sight of this farmhouse, and there is no store or post office within two miles, the farmer and his family may not meet other persons for several days at a time, although they often see friends driving by. In the busiest season, from spring till fall, they make few trips to town. However, they have a telephone by which they can talk with neighbors, and with friends and merchants in town, while the postman brings the mail to their doors.

(3) *Contact with neighbors*

Some persons would not care for such a life as this, because it is too lonesome, and there is too much hard work connected with it. But this farmer enjoys it greatly, because he likes to take care of his stock, to work in the soil, and to watch his crops grow. In addition, he is able to raise most of his own food, and his whole life is more independent than that of persons in a town or city.

(4) *Attractions of such a life*

Corn (Fig. 239) is raised in most of the states of the Union, and you have already learned how important it is in the South. It is in the Central States, however, that we find the

4. Indian corn, or maize

(1) *Extent to which it is raised*

FIG. 239. — View in a cornfield in Nebraska. Notice how very tall the corn grows in this fertile soil.

greatest amount. The *corn belt* of the country (Fig. 371) extends from Ohio to central Kansas and Nebraska, with smaller quantities raised north, south, east, and west of it. Farmers within this belt usually expect to devote from one third to one half of their land to corn; therefore, in traveling across these states in summer, one sees cornfields in every direction.

The seed is planted in rows in the springtime. Soon the little stalks appear above ground, and grow rapidly during the hot summer months, until they reach a height of from seven to ten feet (Fig. 239). In order to keep the soil loose, and kill the weeds, the ground between the rows is plowed when the corn is young; but as it grows higher, the shade of its leaves protects the soil from both drought and weeds.

(2) *How it is cultivated and harvested*

A cornfield usually presents the most beautiful appearance in July, when the corn "tassels out" (Fig. 239). The plants then entirely hide the ground from view, and the rich green stalks, with their long, slender leaves, bend to the breezes in the most graceful manner.

If the stalk is to be used as fodder for cattle in winter, it is cut before frost, when the kernels on the cob are still somewhat soft and milky. If left until after frost, the grain hardens, and then the harvest season begins. Men drive into the fields in wagons and tear the husks from the ear, spending day after day at that kind of work.

Corn is put to many uses. Much that is raised is fed to cattle and hogs, as already stated. Some is made into hominy or breakfast foods, or into corn meal. Starch is another product of corn. It is also very extensively used in the manufacture of whisky in *distilleries*. There are many distilleries in ST. LOUIS, LOUISVILLE, PEORIA, and other cities within the corn belt.

(3) *Its uses*

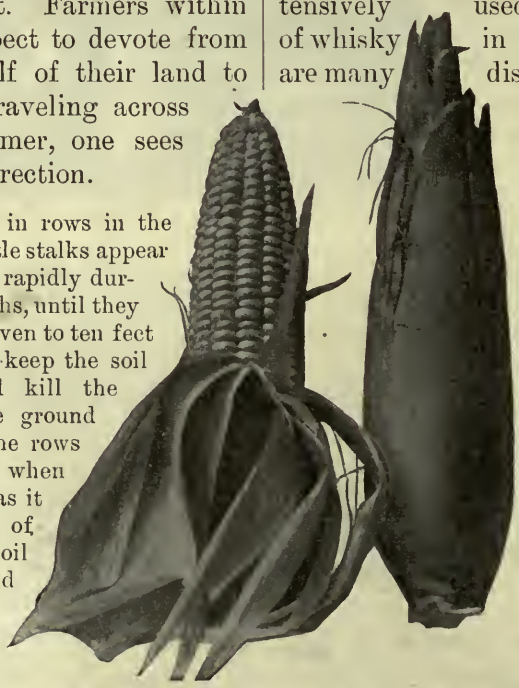


FIG. 240. — Two ears of corn, the one on the left with the husk turned down to show the kernels of corn on the cob.

Wheat, like corn, is produced in all the Central States, as well as in other parts of the country (Fig. 373). It is an especially important product in Kansas, Ohio, and Indiana; but the section which at present is most noted for wheat is the valley of the Red River of

5. **Wheat**

(1) *Extent of its production*

the North (Fig. 236). In this valley there is a broad plain, including western Minnesota, eastern North and South Dakota, and a portion of Manitoba, which is one of the finest wheat regions in the world.

The land here is almost as level as the surface of the sea; it is so level, in fact, that after a rain the water stands in sheets on the fields. It is necessary to build the roads a foot or more above the surrounding land and to make ditches on either side; otherwise they would be muddy much of the time. In every direction there is nothing to break the view except an occasional farmhouse with a few trees around it. Over this open plain the wind sweeps with terrific force, somewhat as upon the ocean; and in winter fierce, blinding snow squalls, or *blizzards*, are not uncommon.

FIG. 241. — A farmer threshing wheat in the harvest season. On the left is an engine which furnishes power to run the threshing machine where the men are standing.

One may ride on the train northward toward Winnipeg all day long, and see scarcely a crop besides wheat. Most of the farms are of moderate size, but some are enormous. For example, one farm in North Dakota contains over thirty thousand acres. How many square miles is that?

(2) *How cultivated on a large farm*

This farm is divided into six parts, with farm buildings upon each. To prepare the ground, from fifteen to twenty men at a time plow and sow the seed on each division. One takes the lead, another follows close behind; then come a third, a fourth, and so on. The grain is harvested on a similar plan. One hundred and twenty men, and three hundred horses, are employed in the planting season, and three hundred men during the harvest. Since one acre usually produces from fifteen to twenty bushels of wheat, an immense amount of the grain is obtained from this single farm.

The great quantity of wheat produced in the Red River Valley and the neighboring region has helped the growth of the cities of MINNEAPOLIS, ST. PAUL, and DULUTH. It has also caused the development of cities in the midst of the wheat fields, notably FARGO in North Dakota and SIOUX FALLS in South Dakota. Since most of the grain is shipped to the East or South, it has influenced the growth of scores of other cities along the Great Lakes, the Mississippi River, and even on the Atlantic coast. State how this can be.

(3) *Influence of wheat on growth of cities*

Each farm in the Central States usually has a small orchard, like that on the Ohio farm; but fruit raising is a *special* industry in those sections where the climate and soil are favorable, as in

6. Fruits and vegetables

(1) *Fruits*

the neighborhood of the Great Lakes. The immense area of water in these lakes, which do not freeze over in winter, makes the summers cooler, and the winters warmer, than they would otherwise be. This is one reason why the grape belt of western New York (p. 117) extends westward along the shores of Lake Erie far into Ohio.

The Michigan peninsula, which has Lake Michigan on the west, and Lakes Huron and Erie on the east, is also a noted fruit-raising region. Here great quantities of peaches, apples, and other fruits are produced. With what part of the Atlantic coast can this fruit region be best compared (p. 117)?

While these regions are especially noted, the raising of fruits is common in all the Central States. Among the kinds raised are peaches, grapes, apples, pears, cherries, plums, and berries.

(2) *Vegetables*

Vegetables of many kinds, such as sweet corn, potatoes, turnips, beets, cabbages, tomatoes, peas, beans, lettuce, pumpkins, squashes, and celery are also raised in all of the Central States. Some of these are grown for use at home, some for canneries, and some for sale in the cities. The fact that there are so many cities makes truck farming profitable, as is the case in New England.

Tobacco is another valuable farm product in the Central States (Fig. 378). While it is raised in many sections, the greatest quantity comes from Missouri, which ranks with Virginia, Kentucky, North Carolina, and Tennessee (p. 155) as a leading tobacco state. St. Louis is an important tobacco market. What other cities have the same industry (pp. 155 and 164)?

7. Tobacco

Fig. 242. — Sheep grazing in a pasture in a hilly part of the Central States, in Missouri.

Some domestic animals are raised on almost every farm. Among these the most important are horses, cattle, sheep, hogs, hens, and turkeys. Some farms, however, are mainly devoted to one or a few kinds (Fig. 243). For example, in the more hilly sections, where it is not easy

8. Domestic animals

to cultivate grain, cattle and sheep are numerous (Fig. 242), and dairying is important. Ohio is one of the foremost sheep-raising states. More horses are raised in Illinois than in any other state in the Union, more hogs in Iowa, and more milch cows in Iowa than in any other state except New York.

9. Other farm products

Great quantities of oats and barley are raised in the Central States. The former is a common food for horses, and the latter is largely used in the manufacture of beer. The great breweries, found in every large city, consume immense quantities of barley in order to obtain the *malt* which is needed in making beer. In CINCINNATI, ST. LOUIS, and MILWAUKEE, beer making is one of the important industries.

Another farm crop in some sections is flax. From the bark of the flax stem a fiber is obtained which is used in making linen, while linseed oil is made from the flax seed. It is chiefly for the latter purpose that flax is raised in the United States. Hops, used with barley in making beer, are also raised; and rye and buckwheat are produced on many farms. Sugar beets are now cultivated in many states, and they supply a part of the sugar consumed in our country.

Finally, a vast amount of hay is grown; some of it is fed to farm animals, but much is sold in the cities for the use of the horses there. The hay crop is one of the most valuable in the Central States.

10. Farming by irrigation on the Great Plains

Passing westward from the fertile valley of the Red River of the North, one finds the farmhouses decreasing in number, and the country becoming more and more arid, until, finally, in western North Dakota, there is almost no farming without irrigation. At the same time, the plains gradually rise higher and higher, until, near the base of the Rocky Mountains, an elevation of fully a mile above the sea is reached. This arid plateau, extending from Canada to southwestern Texas (p. 150), is commonly known as the *Great Plains*.

FIG. 243. — A scene on a chicken farm in Southern Missouri.

(1) *Meaning and extent of the Great Plains*

FIG. 244. — An artesian well supplying water for use in irrigation in western United States.

The soil is excellent, and where irrigation is possible, there are fine farms. In many places the streams furnish water for irrigation; in others, water rises to the surface when wells are driven into the earth. Such wells, from which the water often gushes forth as in a fountain, are called *artesian wells* (Fig. 244). The water comes from the rock layers underground, and by its help much land is now cultivated which a few years ago was of little use.

(2) *Irrigated sections, and their products*

Every year the amount of land cultivated in this section is increasing; and now that the government is building reservoirs to store the waters that run off through the rivers in spring, there will be still more land under irrigation. These irrigated farms produce the same crops as other parts of the Central States. Crops that will grow in a dry climate are also being introduced (called "dry farming"), and this is another reason why farming is increasing here.

11. Ranching

(1) *Its extent*

Most of the arid region of the Great Plains is unsuited to farming. For that reason there are few towns and no large cities, as you can see on the map (Fig. 233). The western third of North and South Dakota, Nebraska, and Kansas, as well as the Great Plains farther west, is given over mainly to *cattle ranching* (Fig. 245).

This industry is carried on in much the same way throughout all parts of the arid West. In western North Dakota, for instance, there is little water except in the widely separated streams, and there are almost no trees except along the stream banks. Since the ranchman must have both water and wood, he locates his house, sheds, and stockades, or *corrals* (Fig. 246), within

(2) *Location of the ranchman's house and corrals*

FIG. 245. — Cowboys and cattle on a ranch in western United States.

easy reach of these two things. If there is no neighbor within several miles, it is all the better, for his cattle are then more certain to find abundant grass.

Few fences are built, partly because most of the region is owned by the government, not by ranchmen. Very often they own only the land near the water; but this gives them control of the surrounding land, for it is of no use to any one else if his cattle cannot reach the water. Another reason why fences are not common is that it is necessary for the cattle to roam far and wide in their search for food. The bunch grass, upon which they feed, is so scattered that they must go a long distance each day to find enough to eat.

(3) *Why few fences*

A single ranchman may own from ten to twenty thousand head of cattle, and yet they may all be allowed to wander about upon public land, called "the range" (Fig. 245). Usually they keep within a distance of thirty miles of the ranch house; but sometimes they may stray a hundred miles away.

Twice a year there is a general collection, or *round-up* (Fig. 247), of cattle, — the first round-up coming in May or June, and the other early in the fall. One object of the first is to brand the calves that have been born during the winter.

(4) *Object of first round-up, and how accomplished*

Fig. 246. — Cattle in a corral on a western cattle ranch.

Since there are few fences, cattle belonging to ranches that are even a hundred miles apart become mixed during the winter; and those in a large herd may belong to a score of different ranchmen. Each cattle owner has a certain mark, or *brand* (Fig. 248), in the form of a letter, a cross, a horseshoe, or some other figure, which is stamped upon every calf with a hot iron.

Fig. 247. — A round-up on the Great Plains. All the cattle in the front of the picture belong to one ranchman; those in the distance to another.

FIG. 248. — This animal bears the brand of the owner. The cowboy is trying to catch the calf that is following its mother; and when he does, he will place the same brand on it.

A round-up, which lasts several weeks, is planned by a number of ranchmen together. A squad of perhaps twenty cowboys, with a wagon and provisions, a large number of riding horses, or "ponies," and a cook, go in one direction; and other wagons, with similar "outfits," set out in other directions. Before separating in the morning, the members of a squad agree upon a certain camping place for the night, and they then scour the country to bring the cattle together, riding perhaps sixty or eighty miles during the day.

Each ranchman knows his own cattle by the brand they bear; and since the calves follow their mothers (Fig. 248), there is no difficulty in telling what brand shall be placed on them. After branding the calves, each ranchman drives his cattle homeward, to feed during the summer within a range of a few dozen miles of their owner's home.

(5) *Second round-up, and what follows*

The second great round-up is similar to the first, except that its object is to bring together the *steers*, or male cattle, and ship them away to market; it is therefore called the *beef round-up*. A ranchman who owns twenty thousand cattle may sell nearly half that number in a season. As the steers are collected, they are loaded upon trains and shipped to distant cities to be slaughtered (p. 193).

Very often the cattle have found so little water, and such poor pasturage, that they have failed to fatten properly, and must be fed for a time before being slaughtered. This may be done upon irrigated fields near the rivers in the ranch country; or the cattle may be sent for this purpose to farms further east, as in Kansas, Missouri, Iowa, and Nebraska.

(6) *Life of the ranchman*

The lives of ranchmen and cowboys are interesting and often exciting, the greater part of each day being spent in the saddle (Fig. 249). They are so far separated from other people that they must depend upon themselves much more than most people do. For instance, a ranchman must build his house, kill his beef and dress it, store his ice, raise his vegetables, do his blacksmithing, find his fuel, and even teach his children if they are to receive a school education. He

FIG. 249. — A cowboy and his pony. The rope in his hand is his lariat, with which he lassoes the cattle.

affords a good illustration of the pioneer life which was so common in early days.

Lumbering

A large portion of the Central States produces little lumber: first, because much of the land never had any forest; and second, because much land that was once wooded has now been cleared. The timber cut from it has been used for building, or other purposes, and the cleared sections have become productive farm land.

The largest area that was covered with timber, when first discovered, was in Michigan, Wisconsin, and Minnesota, near the Great Lakes. Here the land is more hilly than in most parts of the Central States, and it was clothed with dense forests.

In these forests were many kinds of trees belonging to the north, especially the evergreens, such as hemlock, spruce, white pine, and cedar. There were also some hard woods, such as oak, birch, and maple.

Although much of the timber has been removed (Fig. 250), lumbering is still carried on in this section, as well as in some other parts of the Central States.

The excellent water power in the Mississippi River, at MINNEAPOLIS (Fig. 268), early led to the building of sawmills there, and made that city famous for lumber. There are also a considerable number at DULUTH, in Minnesota, and at SUPERIOR, which is just across the state line in Wisconsin.

FIG. 250. — A sawmill in Wisconsin. The logs are floated from the forest by the river, and sawed into lumber in the mill.

Fishing

Since the Central States have no seacoast, all the oysters, and other sea food eaten in this section, must be brought from the Atlantic, or the Pacific, or the Gulf coast. Thus, while the people of these states supply meat and grain for those living in other parts of the country, they, in turn, depend upon others for some of their food.

The Central States, however, are not entirely dependent upon the sea for their fish. In the rivers there are some excellent fish, quite different from those in the ocean; and in the lakes there are still other kinds. There is, therefore, considerable fishing here, especially on the Great Lakes; but the fishing industry is by no means so important as in the groups of states already studied.

Mining

1. Coal

(1) *Its wide distribution*

Coal, the most important fuel, is mined in almost all the Central States. Illinois produces most, ranking next to Pennsylvania among our states. West Virginia ranks third and then comes Ohio. Large quantities are produced also in Indiana, Iowa, Kansas, Missouri, and Michigan. There is so much coal in this section, and it is found throughout so large an area, that it is easy to obtain fuel for manufacturing in almost every part. (See Fig. 391.)

Pennsylvania produces two kinds of coal, anthracite and bituminous, but the Central States have only the latter. It is bituminous coal however that is used in making coke; and because coke is necessary in iron manufacture, the coal of these states is especially important. In some places the coal lies near the surface, like rock in quarries, and then the mining is very simple; in others it is buried so deep that long shafts must be sunk to reach it.

(2) Kind of coal, and method of mining it

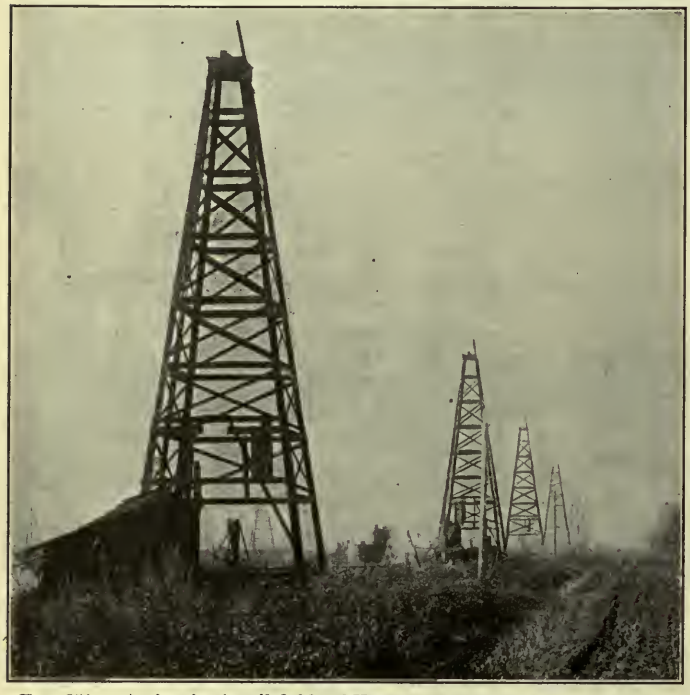


FIG. 251. — A view in the oil fields of Kansas. There is an oil well under each derrick.

When oil and natural gas were first discovered in New York and Pennsylvania, it was supposed that they did not exist elsewhere; but they have since been found in many places. Name some of them (pp. 123 and 160). Both oil and gas are obtained in several of the Central States, especially Ohio, Illinois, Indiana, and Kansas. Many farmers, whose soil is no better than that of their neighbors, have suddenly become rich by the discovery of oil or natural gas in the rocks far beneath the surface (Fig. 251). In fact, these substances are so abundant in some places that towns, like FINDLAY in western Ohio, have sprung up there like mushrooms.

2. Oil and gas
(1) Where found

The way in which gas and oil are formed, and the uses to which they are put, have already been described (pp. 123–124).

In many places in the Central States natural gas is in common use, furnishing both light and heat in the houses, and fuel in the factories. It is a very cheap fuel, for, after the hole is bored into the earth, it costs almost nothing to produce the gas. The main expense is the cost of the pipes through which it passes.

(2) Cheapness of gas as a fuel

Once Pennsylvania was the chief iron-producing state, having both coal and iron ore; but some years ago explorers discovered enormous beds of iron ore near the western end of Lake Superior. In some places the ore is so soft that, like gravel, it can be dug out with steam shovels, and very often it is so near the surface that the mines are open pits. In other places the mining is done underground. That is the case,

3. Iron ore
(1) The Lake Superior district

for example, at ISHPEMING, in northern Michigan (Fig. 252).

This Lake Superior district is now the leading iron-producing center of the world. It includes parts of three states, — Michigan, Wisconsin, and Minnesota, — the most important being Minnesota (Fig. 393), and the least important Wisconsin. These three states together produce fifty times as much iron ore as Pennsylvania, and three quarters of all the iron ore mined in the entire country. The enormous development of mining in this region has caused numerous towns and cities to grow up here.

There is no coal in this iron district. Therefore, in order that the ore may be reduced to the metal, either coal must be carried to the iron mines, or else the ore must be moved to the coal. The latter has proved the cheaper. Accordingly, hundreds of boats sail every year from the lake ports of DULUTH, SUPERIOR, ASHLAND, and MARQUETTE, loaded with ore for the manufacturing centers along the lakes.

(2) *Why the ore must be transported, and from what ports*

Fortunately the iron mines are near waterways. If it were necessary to haul the heavy ore a long distance by rail, the expense might be so great as to check its production. As it is, however, the ore is mined, loaded upon cars, and sent over short lines of railway to the lake shore.

(3) *How it is loaded, and where sent*

Great ore docks (Fig. 253), or piers, reaching out into deep water, have been built to hold the ore. Railway tracks are laid upon the docks, and the trains run out upon them to dump their contents quickly into bins. On a single pier there are scores of bins, which together hold enough ore to fill several large vessels. When a vessel is to be loaded, it comes up to the pier; then a door at the bottom of a bin is opened, allowing hundreds of tons of ore to slide out. After this, the next bin is emptied, and in this way the vessel is filled in a few hours.

As the ore must reach a point where coal is easily obtained, it is taken to such lake ports as CHICAGO, DETROIT, TOLEDO, CLEVELAND, and BUFFALO. Notice how close to these cities the coal beds extend (Fig. 391). From the lake ports some of the ore is carried by rail to PITTSBURG, and to many other places in the midst of the coal fields.

FIG. 252. — At work in an iron mine at Ishpeming, Michigan.

Another metal found in the Central States is copper, which is valuable in many ways. It is one of the metals used to make bronze, and also brass; but of late years a new and even greater demand for this metal has arisen. Electricity passes through copper more easily

4. Copper ore

(1) *Uses of copper*

than through other common metals; copper is, therefore, the best material for trolley wires, for the wire of long-distance telephones, and for wire used in electric lighting. Since the use of electricity is rapidly increasing, there is a growing demand for copper.

(2) *Where the ore is found*

The Indians and early explorers found pieces of copper on the surface of the ground in northern Michigan. Later it was discovered in the rocks beneath the soil. These bits of rock and leave the heavier particles of copper. Even after this, some foreign substances are still mixed with the copper, and these must be removed before the metal is fit for use. In order to remove them, the copper is next placed in a large *smelter* and melted. The pure copper is allowed to run out of the furnace and cool in bars to be shipped away (Fig. 254). Among the foreign substances is a little silver, which is carefully saved.

FIG. 253. — The great ore docks on the shores of Lake Superior. Trains loaded with ore run out onto these docks and dump their ore into large bins, from which vessels are loaded.

copper-bearing rocks are found on the small peninsula that extends into Lake Superior near HOUGHTON. Copper mines were started there long ago, and for many years it has been one of the leading copper-mining regions of the world.

(3) *How copper is obtained from the ore, and where sent*

Some of these mines are very deep, one of the shafts reaching to a depth of about a mile. When the ore is drawn to the surface, it is found mixed with so much rock that it must first be crushed to a powder under powerful hammers, or *stamps*. Then water is run over it, in order to carry away the

As in the case of iron ore, the copper is shipped to points along the lakes, and elsewhere, by water or by rail. Much of it goes to the metal manufactories in New England (p. 130). Name some goods that must be shipped *into* this copper section, instead of away from it. Why?

(4) *Population dependent on these mines*

The largest of the copper mines are near together, and so many men are employed in obtaining the ore, and in getting out the pure metal, that large towns have grown up near the mines. Within a few miles of the most important mines are several towns, the largest being CALUMET. Many of the people living in these towns are miners and families of miners; but there must be, of course, merchants, physicians, teachers, ministers, and people of other occupations; and

they all depend for a living upon the precious copper buried far beneath the surface.

5. Other mineral products

(1) *Building stones, sand, and clay*

There is an abundance of *building stones* in the Central States. Among these are sandstone and limestone, which are shipped in all directions for building purposes. Limestone is also used in iron smelting and in making Portland cement. In addition, there are slates and granites in the hilly and mountainous sections, as there are in New England (p. 122).

Several states produce much *sand*, which is melted and made into window glass, bottles, and other objects. Clay of various kinds, used in making bricks and tiles, is abundant in all the states.

(2) *Lead, zinc, and gold*

Lead and zinc are mined in many places, as at JOPLIN, Mo., and then sent to furnaces, where the pure metals are separated from the ore. A large part of our supply of lead and zinc is obtained from Missouri. What are some of the uses of these metals? Of what use should you think this lead was to the early pioneers?

Gold is mined in the Black Hills in the extreme western part of South Dakota.

(3) *Salt*

Much salt is obtained in the Central States, especially in Michigan. This state produces more salt than any other in the Union. New York is second, Ohio third, and Kansas fourth.

FIG. 254. — Bars of copper on the dock at Houghton, Michigan. These are to be carried away by the large lake steamer.

The Central States produce an abundance of raw materials, and there is also much coal oil and gas for fuel, while in some places there is water power. Naturally, therefore, this section has become a great manufacturing region.

Manufacturing

Since this is our leading wheat-producing region, the greatest flour mills in the country are located here. Because of the wheat and other grains, breakfast foods are made in enormous quantities, and there are many distilleries and breweries.

1. From farm products

The small fruits and vegetables, such as berries, beans, peas, tomatoes, and sweet corn support a great canning industry. Tobacco adds another kind of manufacturing, and the sugar beet still another.

A very important industry is the production of meat. Cattle, sheep, and hogs are slaughtered by the tens of thousands, and the meat and other animal products are shipped to all parts of the country, as well as to Europe. Butter, cheese, lard, soap, hides, wool, and other animal products, besides meat, are prepared in this section.

While many of these farm products are shipped to other regions for manufacture, many of them are consumed in this way in the Central States. For example, there are large woolen mills and shoe factories here, as well as in New England.

Near the forests, both along the streams and on the shores of the Great Lakes, the manufacture of furniture and other articles from wood is extensive. Farming being the greatest

2. From forest products

FIG. 255. — A crowd of workmen leaving a factory at the close of the day, at Dayton, Ohio.

industry, there is a demand on all sides for wagons, plows, mowing machines, threshing machines, and other farm implements. Naturally, therefore, they are manufactured here in great numbers.

CHICAGO is especially noted for the manufacture of furniture; and on many of the rivers of Minnesota, Wisconsin, and Michigan, where there is abundant water power, there are sawmills, furniture factories, and planing mills. Some of these are at OSHKOSH in Wisconsin, and at SAGINAW, BAY CITY, and GRAND RAPIDS in Michigan. Grand Rapids is especially noted for the manufacture of school desks, office desks, chairs, tables, and other kinds of furniture. Many of the cities are noted for the manufacture of farm implements.

Metal manufacturing in the Central States is quite as important as in the states along the Atlantic coast, and the industry is rapidly growing.

3. From mineral products

(1) *From metals*

The manufacture of iron ore into iron and steel goods occupies an enormous number of men in hundreds of cities and towns. Some of the largest iron and steel plants in the country are in Ohio, Illinois, and Indiana. Among them are the great steel works at Gary, Indiana. The manufacture of copper goods is another extensive industry, and many products are made from lead and zinc.

Crude oil is made into many products, as in the Northeastern States. Name some of these products (pp. 123–124).

(2) *From oil, clay, and limestone*

Much of the deep soil in the prairie states is a clay which is useful in the manufacture of bricks. As in other sections of the country (p. 130), there are many brickyards, especially near the large cities. From this same kind of clay, flowerpots, drainpipes, and other articles are made. During recent years, when drainage of farm land has become common, the manufacture of tile for that purpose has developed into a great industry. Many a small town has a tile factory.

A very high grade of pottery, known as Rookwood ware, is manufactured in Cincinnati. The best of clay is needed for this, which in this case must be brought from a distance. The first step in making a vase is to wet a lump of clay so that it may easily be molded. Then it is placed upon a potter's wheel, where it is whirled rapidly around while a man molds it with his hands. In a very few minutes he changes the shapeless lump into a delicately formed vase. It must then be baked, and after the baking, flowers or other ornaments may be painted upon it. The surface is finally covered with a substance which, when baked, produces a *glaze*. One of the beauties of the Rookwood ware is the peculiar color of the glaze, which is a dark or yellowish brown.

In Indiana, Kansas, Illinois, Michigan, and other states of this section, Portland cement is made from limestone. Pennsylvania produces the most cement, but several of the Central States produce large amounts.

The handling of so many raw materials and manufactured products leads to extensive commerce. Transportation of bulky goods, such as ores, coal, and wheat, is especially important in a region where the coal and iron ore are so widely separated, and where far more wheat is raised than can be consumed.

Transportation of goods

The highways used for this purpose are of two kinds; (1) those that are natural to the country, and (2) those that have been made by man. The first may be called *natural*, the second *artificial*.

Of the natural highways, the Great Lakes are far the best, being so large that they are properly called *inland seas*. They form, in fact, the most remarkable inland waterway in the world, for large vessels can sail upon them, and they reach into the very heart of a fertile and productive country. From Duluth to Buffalo there is only one place where navigation is interfered with. That is at the outlet of Lake Superior into Lake Huron, where there are some rapids. Here a broad canal, large enough for the Great Lakes vessels, has been dug. It is called the *Soo Canal* (Fig. 256), after the city Sault Ste. Marie, located at this point.

1. The natural highways

(1) *The Great Lakes*

Fig. 256.—The "Soo" Canal. Boats going west pass through the canal on the right; those going east pass through the canal on the left. In the very front of the picture is the gate of a lock.

What canal connects Lake Erie with Lake Ontario (Fig. 183)? Why is a canal there necessary? (Fig. 149.)

While the Great Lakes outflow toward the east, the Mississippi River and its two large tributaries, the Missouri and Ohio, flow toward the south. These great

(2) *The rivers*

FIG. 257. — Shipping on the Chicago River. This was the first port at Chicago, but now breakwaters built out into the lake make a large harbor.

waterways are highways of travel for boats. Every one of the Central States is reached either by a lake, highway, or by a river.

Among the artificial highways are roads and canals; but the railroads are especially to be noted. The surface of the land is generally so level that railway lines have been easily built; and the country is so fertile, and has become so fully settled, that it is crossed by railroads in all directions. Most of the great railroad systems that cross the continent from east to west pass through either Chicago or St. Louis.

2. The artificial highways

Since the Central States have no ocean coast, we naturally find the principal cities along the Great Lakes and the three great rivers, where it is possible to ship goods by water. Let us first consider those along the Great Lakes.

Principal cities along the Great Lakes

At the western end of Lake Superior there is a fine harbor, one side being in Minnesota, the other in Wisconsin. Upon this harbor are two cities, DULUTH and SUPERIOR, which together have a population of over a hundred and twenty thousand. The chief products of this vicinity are iron, lumber, and wheat, which are shipped eastward in immense quantities from these two ports. Owing to the nearness of these cities to the Minnesota and Dakota wheat fields, there are enormous elevators for storing grain, and flour mills for grinding it into flour.

1. Duluth and Superior

Locate Chicago. At this point the small Chicago River empties into Lake Michigan (Fig. 257), forming a small harbor, on which a fort was located in early times.

2. Chicago

As the West developed, this site proved to be a most favorable one; for whenever a railway was built from the East to the Northwest, it was necessary for it to pass around the southern end of Lake Michigan. As the city grew in size, more railways were built to it *because* it was large; and now they

(1) *Advantages of this site*

FIG. 258. — A busy Chicago street crowded with wagons.

approach it from the east, west, north, and south (Fig. 259). Thus Chicago has become a great railway center.

The city is an important shipping point for grain, because it lies near the most productive grain region in the world. It is also within easy reach of extensive coal fields, while lumber and iron ore are readily brought to it by boat. These facts have caused Chicago to have a wonderful growth. In the year 1840 there were but 4470 inhabitants; but to-day it has a population of 2,185,000, making it the second city in size in the New World. It has long since outgrown its small natural harbor, and a much larger one has been made by building long breakwaters out into the lake.

Chicago is not only a great grain market, but is also the most important meat market in the world. All the grazing states of the West ship stock to this point, and in the city itself nearly a square mile is taken up by the Union Stockyards (Fig. 260). In these are large sheds for the various kinds of stock, pens with high fences, and troughs for food and water (Fig. 261). Trainloads of cattle, hogs, and sheep are unloaded here every day. The work employs about thirty thousand men.

(2) Meat packing and related industries

The packing houses send out a number of products. By far the most important is meat, for most of the cities of the East are furnished with fresh meat from Chicago and other

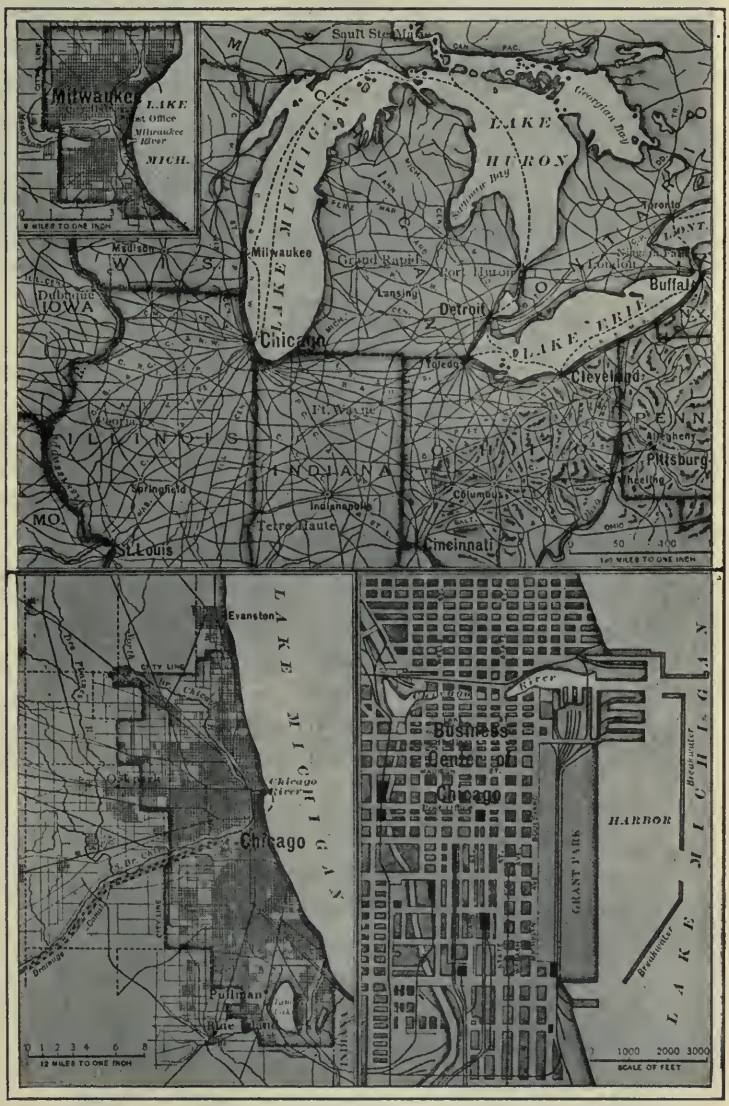


FIG. 259. — Map showing the location of Chicago and Milwaukee.

FIG. 260. — A general view of the stockyards at Chicago.

western cities. Both live cattle and fresh meat are sent in large quantities to Europe also. It may be several weeks after the meat is prepared for food before it reaches the table; yet all this time it is kept fresh by the use of ice. Special refrigerator cars are built for the sole purpose of carrying it.

Besides the meat that is sold fresh, much is canned. The fat of the hog is made into lard, and not a little beef fat is made into imitation butter, called oleomargarine. Many of the bones are burned and used in the manufacture of sugar (p. 154); and the horns and hoofs are of use in making gelatin and glue. The hides are made into shoes, gloves, harnesses, and other leather goods. Nothing is wasted in the packing business; even the bristles of the hog are saved and made into brushes; and the hair from the hides of cattle is valuable in making plaster.

There are many companies engaged in the making of iron and steel goods; one of them alone, the Illi- (3) *Other manufacturing*
nois Steel Company, employs ten thousand men. An enormous amount of furniture is made, and the manufacture of farming implements is also very extensive. Chicago is the home of the National Harvester Company, which controls the manufacture of farming implements in most parts of the country. A single one of its plants sends out about three hundred thousand farm machines every year. The

FIG. 261. — A view of a small part of the stockyards (Fig. 260), showing cattle in the pens.

Pullman Car Works have made as many as ten thousand freight cars in one year, besides several hundred passenger cars. As in New York (p. 138) and other great cities, the making of clothing is one of the leading industries. These are but a few of the many kinds of manufacturing in this great city.

Like other very large cities, Chicago has much difficulty in providing transportation for the people of the city. Street cars are one important means, and many steam railways carry passengers to and from the heart of the city. There are elevated railways (Fig 262), also, as in New York, and underground roads, as well. But unlike those in New York, the underground roads are used mainly for hauling freight.

(4) *Transportation and sewage*

FIG. 262 — A view of an elevated railway in Chicago at the point known as the Union Loop.

Another great difficulty was the proper care of the sewage of the city. For a long time it was poured into Lake Michigan; but as the drinking water was taken from the lake, this became very dangerous to the health of the people. In order to carry it away, an immense drainage canal has been dug (Fig. 259), connecting Lake Michigan with the Illinois River, and thus setting the current toward the Mississippi and the Gulf of Mexico. This drainage canal, which is wide and deep enough for boats, may in time develop into a ship canal. In that case, large ships may reach Chicago from the Gulf of Mexico, as they now do from the Gulf of St. Lawrence. What effect would this have upon the city?

3. Milwaukee and Racine

Other large cities along the lakes are engaged in many of the same industries as Chicago. MILWAUKEE (Fig. 259), the largest city in Wisconsin, deals extensively in grain, lumber, and leather, packs much pork, and manufactures great quantities of flour and machinery. It is a busy and rapidly growing city. Locate RACINE, a smaller but important lake port.

4. Detroit

DETROIT (Fig. 263), the largest city in Michigan, is also on the Great Lakes water route. The name is a French word for *strait*. Why is that name suitable? All vessels going east or west must pass this city; and some of the railway trains from eastern Canada to the West cross the strait at this narrow point or pass beneath it in a tunnel. Being at the crossing of important railway and steamship lines, Detroit has become a great shipping and manufacturing center. It deals in grain, wool, pork, and ores from the West, and makes iron and steel goods.

5. Cleveland and Toledo

On the lake shore in Ohio the chief cities are TOLEDO and CLEVELAND (Fig. 263). The former has extensive flour mills and iron manufactories; and the latter, which is

a much larger city, being even larger than Cincinnati, Detroit, or Buffalo, has an important trade in grain, lumber, and ore. The situation of Cleveland near the coal and petroleum fields has led to the extensive manufacturing of machinery, furniture, and other goods. Much petroleum is refined here, and the building of ships for the lake commerce is an important industry.

Locate the principal cities of the Central States that are situated on or near the Great Lakes. Named in order of size, they are Chicago, Cleveland, Detroit, Milwaukee, Toledo, Duluth, and Superior. In what state is each of them? On which lake? Through what lakes would one go in passing from Cleveland to Chicago? From Cleveland to Duluth?

FIG. 263. — Map showing the location of Detroit, Cleveland, Cincinnati, and Pittsburg, and their relation to the trade routes of the Central and Northeastern States.

The largest city on the rivers, corresponding to Chicago on the lakes, is ST. LOUIS, the fourth in size among our cities (Fig. 267). It has a very favorable position in the center of the Mississippi Valley, on the Mississippi River near the mouths of its two largest tributaries. The railway bridges across the Mississippi at this point have also had great influence on the growth of the city. It is an important shipping point both by water and by rail.

Principal cities along the rivers

1. St. Louis

(1) *Its location*

Like Chicago, St. Louis is one of our leading markets for grain and live stock; but, being so far south, it handles Southern products also, especially

(2) *Its industries*

FIG. 264. — Shipping on the Great Lakes. The peculiar ship in the foreground is called a whaleback.

FIG. 265. — A railway bridge across the Missouri River above St. Louis.

FIG. 266. — A general view of St. Paul, with the Mississippi River in the foreground. The state capitol of Minnesota is on the hill at the left.

cotton and tobacco. Besides this, it is a noted mule and horse market, and manufactures immense quantities of tobacco, beer, flour, boots, shoes, clothing, and iron and steel goods.

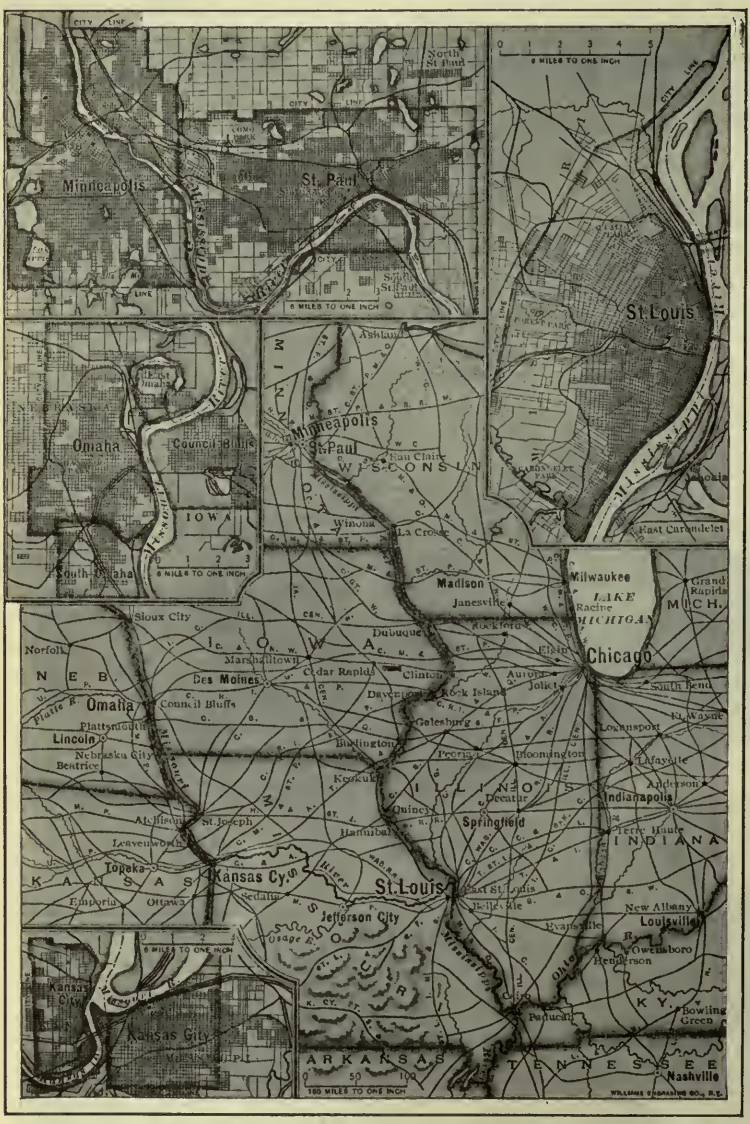


FIG. 267.—Map showing the location of St. Louis, Kansas City, Omaha, Minneapolis, and St. Paul.

At one time Chicago and St. Louis were almost the only noted markets for grain and live stock in the West; but in later years several other cities have become prominent. Two of these are

2. St. Paul and Minneapolis

the "twin cities," MINNEAPOLIS and ST. PAUL (Fig. 267), both on the Mississippi River. The latter (Fig. 266), the capital of Minnesota, is a trade center. From it the products of the West are sent east and south, while farm implements, furniture, clothing, and other articles are distributed throughout the region.

MINNEAPOLIS, only ten miles distant, is situated at the Falls of St. Anthony, which furnish splendid water power (Fig. 268). Its location in the midst of the wheat region, together with its water power, has caused Minneapolis to become the leading flour-producing center of America. In the city are many sawmills, grain elevators, and flour mills.

Smaller cities on the Mississippi River between this point and St. Louis are WINONA, in Minnesota; LA CROSSE, in Wisconsin; DUBUQUE and DAVENPORT, in Iowa; and QUINCY, in Illinois. Find each.

3. Other cities on the Mississippi

Each is important either for lumber, grain, or farming implements, or for all three combined.

4. Cities on and near the Missouri

The leading cities on the Missouri River are KANSAS CITY (Fig. 267), in western Missouri, and OMAHA, in Nebraska. Each is surrounded by a fertile farming country, which produces much grain. Each is also a market for cattle, sheep, and horses, raised near by and in the arid region farther west. Being so near the ranch country, the meat-packing industries in both of these cities are gaining rapidly each year. Note that there is also a Kansas City in Kansas.

FIG. 268. — The St. Anthony Falls at Minneapolis — some of the factories are seen in the distance.

On the river above Kansas City is ST. JOSEPH, in Missouri; and below it is JEFFERSON CITY, the capital of that state. Farther west, in Kansas, are TOPEKA, the capital, and WICHITA. Southwest of Omaha is LINCOLN, the capital of Nebraska; and across the river, in Iowa, is COUNCIL BLUFFS, a center for the manufacture of farming implements. Several cities northwest of this point are chiefly important as trade centers. Find some of them on the map. Locate DES MOINES, the capital of Iowa. Of what advantage is its central position in a level farming country?

FIG. 269. — River boats on the Ohio at Cincinnati.

5. Cities in the Ohio Valley

Pittsburg and Wheeling, on the upper Ohio river, the one in Pennsylvania and the other in West Virginia, owe their importance largely to coal and iron, and to the fact that river boats can reach them. Farther down the river is CINCINNATI (Fig. 263), the largest river port in the state of Ohio, and a busy shipping and manufacturing center (Fig.

269). Besides pottery (p. 191), this city manufactures large quantities of iron, machinery, and clothing. Across the river, in Kentucky, are COVINGTON and NEWPORT (Fig. 263), both almost a part of CINCINNATI, as Jersey City is almost a part of New York.

Farther north and east, in Ohio, are DAYTON and SPRINGFIELD, both noted for the manufacture of farm machinery. DAYTON is engaged in manufacturing of many kinds, including the making of cars. COLUMBUS, the capital of Ohio, is an important trade center, and manufactures many carriages and wagons.

EVANSVILLE, the largest river port in Indiana, is principally engaged in the manufacture of flour, machinery, and leather goods. INDIANAPOLIS, the capital and metropolis of Indiana, is in the midst of a fine farming district. Like Columbus, it is a railway and trade center, and handles much grain, lumber, and furniture, and many farming implements.

Locate the principal cities on the large rivers, and tell for what each is important. In order of size, they are St. Louis, Cincinnati, Minneapolis, Kansas City, St. Paul, and Omaha. In which state, and on what river, is each of these? How could you go by boat from Cincinnati to St. Paul? From Cincinnati to Omaha? On what rivers would you travel in each case, and through, or on the border of, what states?

Review Questions

1. What can you say about the area of these states? 2. The population? 3. The importance of agriculture? 4. What three conditions have been very favorable to farming? 5. State facts about the farm in Central Ohio; (1) the house and its surroundings; (2) the fields and their crops; (3) the neighbors; (4) the attractions of such a life. 6. To what extent is Indian corn raised in these states? 7. How is it cultivated and harvested? 8. Name several of its uses. 9. What Central States are noted for wheat production? 10. Describe the method of cultivating it on a large farm. 11. Explain its influence on the growth of many large cities. 12. What fruits are grown in the Central States? In what sections? 13. What vegetables are common? 14. Which states are noted for tobacco? 15. Tell about the domestic animals. 16. Other farm products of these states. 17. Farming by irrigation on the Great Plains. 18. Where is ranching the principal industry? Why there? 19. What can you say about the location of the ranchman's house and corrals? 20. Why are few fences needed? 21. Tell about the two roundups. 22. Describe the life of the ranchman. 23. Give some facts about lumbering in these states. 24. Fishing. 25. The distribution of coal. 26. The kind of coal, and method of mining it. 27. Where are oil and gas found? 28. State the importance of the Lake Superior district for iron ore. 29. Why is it necessary to transport the ore a long distance before manufacturing it into iron? 30. Name and locate several points to which it is taken. 31. What are some of the uses of copper? 32. Where in these states is copper ore found? 33. How is the copper obtained from the ore? Where is it sent? 34. Show that a large population is dependent on these copper mines. 35. Tell about other mineral products in the Central States. 36. What manufactures from farm products are very important in these states? 37. What manufactures from forest products? 38. From ores? 39. From oil, clay, and limestone? 40. Explain the value of the Great Lakes for the transportation of goods. 41. The value of the rivers. 42. Give a few facts about the importance of the railroads, also. 43. Explain the importance of Duluth and Superior. 44. The advantages of the location of Chicago. 45. Tell about meat packing and related industries in Chicago. 46. Other manufacturing in that city. 47. The difficulties of transportation and sewage there. 48. State the principal facts about Milwaukee and Racine. 49. Detroit. 50. Cleveland and Toledo. 51. St. Louis. 52. St. Paul and Minneapolis. 53. Other cities on the Mississippi River.

54. Cities on and near the Missouri River. 55. Cities in the Ohio Valley.

Review Questions by States

Ohio (O.). 1. Name the four largest cities (see Appendix). State the advantages of each location. 2. What other cities of Ohio are mentioned? For what is each important? 3. Why is there much manufacturing in this state? 4. What other industries are mentioned in the text? 5. Examine the maps (Figs. 371–381) in order to see what crops are especially important in Ohio. 6. In what ways are the cities of Ohio dependent upon New Orleans and New York? How are the latter cities dependent upon those in Ohio? 7. Of what service to Cleveland and Toledo is the Erie Canal? 8. Draw a sketch map of Ohio like that of Maine (p. 146). As you study each state, do the same.

Indiana (Ind.). 9. Examine the maps (Figs. 371–381) to see what crops are produced in Indiana. 10. What minerals are found here? 11. Which is the largest city? For what noted? 12. What other cities are mentioned? 13. What are the industries of Indiana? 14. Of what importance was the fact that a large part of this section was treeless when discovered?

Illinois (Ill.). 15. Examine the maps (Figs. 371–381) to see what crops are especially important. 16. Why is there much manufacturing in Illinois? What kinds are carried on? 17. Of what value is the lake to manufacturing? 18. State the reasons why Chicago has developed so greatly. 19. What other cities are mentioned in this state? For what is each important? 20. Which of the four states so far reviewed is the largest? Which smallest (see Appendix)?

Michigan (Mich.). 21. What lakes does this state border? Of what advantage is this? 22. What disadvantage can you see in the fact that water separates the lower from the upper peninsula of Michigan? 23. Ice stops canal traffic in winter. What effect must this have? 24. Into what waters does this state drain? Contrast this drainage with that of the other states. 25. Where are most of the large cities? Why there? 26. For what is each important? 27. Give the reasons for the location of Detroit. 28. What are the important products of Michigan?

Wisconsin (Wis.). 29. Which is the largest city in this state? For what important? 30. What other cities are mentioned in the text? What is done in each? 31. Compare Wisconsin with Michigan in relief; in mineral products; in crops; in the size of cities. 32. What effect must the lakes have upon the climate? Would this influence be greater or less than in Michigan? Why? 33. If there were coal beds in northern Wisconsin, what effect might the coal have upon Chicago, Cleveland, and the coal mining of Pennsylvania?

Minnesota (Minn.). 34. Where does the Mississippi River rise? 35. What oceans receive the water that falls upon Minnesota? Give proof. 36. What manufacturing industries are carried on in this state? 37. What crops are raised? 38. Name the three largest cities, and tell how each is important. 39. How does the largest compare in size with Boston? With Cincinnati?

Iowa (Ia.). 40. Examine the maps (Figs. 371–381) to see what crops are raised in this state. 41. What other important industries are carried on? 42. Name the largest cities. For what are they noted? 43. Much corn is raised here; what is done with it?

Missouri (Mo.). 44. Examine Figures 371–381 to see how the crops of Missouri differ from those of Minnesota. Why this difference? 45. Why are so few large towns found in the southwestern part? 46. Name and locate the two largest cities. For what is each important? 47. What other cities are mentioned? 48. Find the population of St. Louis; compare it with that of Philadelphia and Boston. 49. Give five reasons for its great size.

Kansas (Kan.). 50. Why are the cities in the eastern part? 51. What are the industries of the West? Why? 52. What are the leading crops in Kansas (Figs. 371–381)? What other industries are important? 53. Name the principal cities. For what is each noted?

Nebraska (Neb.). 54. How do the industries of Nebraska compare with those of Kansas? Why? 55. How are these states alike in regard to location of cities? 56. What cities in Nebraska are mentioned? 57. For what is Omaha noted?

North and *South Dakota* (N.D. and S.D.). 58. These two states once formed the territory of Dakota. Suggest reasons for making two states out of the one territory. 59. Compare the industries of the two states with those of

Nebraska and Kansas. 60. Look at the corn and wheat maps (Figs. 371 and 373) to see where most wheat and corn are produced. Is North Dakota more or less important than Kansas as a corn-producing state? Answer the same for wheat. Why is this so? 61. Of what advantage would it be to Fargo if a deep river extended from that city to Duluth? 62. How do the Black Hills increase the wealth of South Dakota?

General Review Questions

63. Which state is the largest in this group (see Appendix of Statistics)? Which smallest? Compare each of these two in area with Pennsylvania; with Texas. 64. Which of the Central States has most inhabitants (see Appendix)? Which fewest? Compare each of these two in population with New York; with Texas. 65. Find the ten largest cities (see Appendix).

Suggestions

1. Write a brief description of the Western prairies. 2. Find how much earlier in the autumn frosts come in Minneapolis than in Memphis. 3. How do farms that you have seen differ from the Ohio farm described in the text? 4. Find other uses of corn, besides those mentioned. 5. How does the wind often help ranch cattle to obtain food in winter? 6. What are some of the advantages that cowboys experience? 7. Why are coal and brick especially valuable in a prairie country? 8. Visit a brickyard, and write a description of brickmaking. 9. See how long a list you can make of articles manufactured partly or wholly out of copper. 10. Do the same with regard to lead. 11. Do the same with regard to iron. 12. From what animals do wool, beef, veal, pork, mutton, lard, tallow, and leather come? 13. Add some wheat, corn, and other grains to the school collection. 14. How are the advantages of the location of Chicago somewhat similar to those of Atlanta? 15. Make a drawing of the great water route from Duluth to New York City, and put in the leading cities located upon it. What states border on this route? 16. Make a drawing of the Mississippi, Missouri, and Ohio rivers, and include the leading cities. What states do these rivers border or cross? 17. Make a sketch map of the Central States, including the principal lakes, rivers, and cities. 18. Name and locate the capital of each of the Central States.

5. The Western States

Map study

1. Name the states in this group. Write the names. 2. In what direction do the mountain ranges cross them? 3. Name the principal ranges. 4. Name and trace the chief rivers. 5. In what section do you find very few rivers? What does that suggest about the rainfall? 6. Find some rivers emptying into lakes with no outlet. Are those salt or fresh water lakes? Why? 7. How far is it across these states, measuring from the northern to the southern boundary of the United States? 8. How far is it from New York City to San Francisco? 9. Measure the length of California. Compare its length with that of Pennsylvania. 10. Compare the area of California, also of Colorado, with that of Pennsylvania. (See Appendix.) 11. What one of our states is larger than California? How much larger? 12. What states border on the Pacific Ocean? 13. How does the Pacific coast compare in regularity with that of the Northeastern States (Fig. 144)? 14. On Figure 138 note whether San Francisco is farther north or south than New York City. 15. On the same map find out, as nearly as you can, the point that is midway between New York City and San Francisco. 16. Name those states whose waters drain mainly or entirely into the Pacific; into the Atlantic; into the Great Basin.

Area

These eleven states are larger than the Northeastern and Southern States combined. Indeed, they make up much more than one third of the entire area of the United States.

Population

1. Effect of discovery of gold

Little was known about them until 1848, when gold was discovered in the stream gravels of California. As the discovery became known, however, tens of thousands of persons in the East left farms, factories, and homes in a mad rush for the gold fields. Some sailed all the way around South America; others crossed the Isthmus of

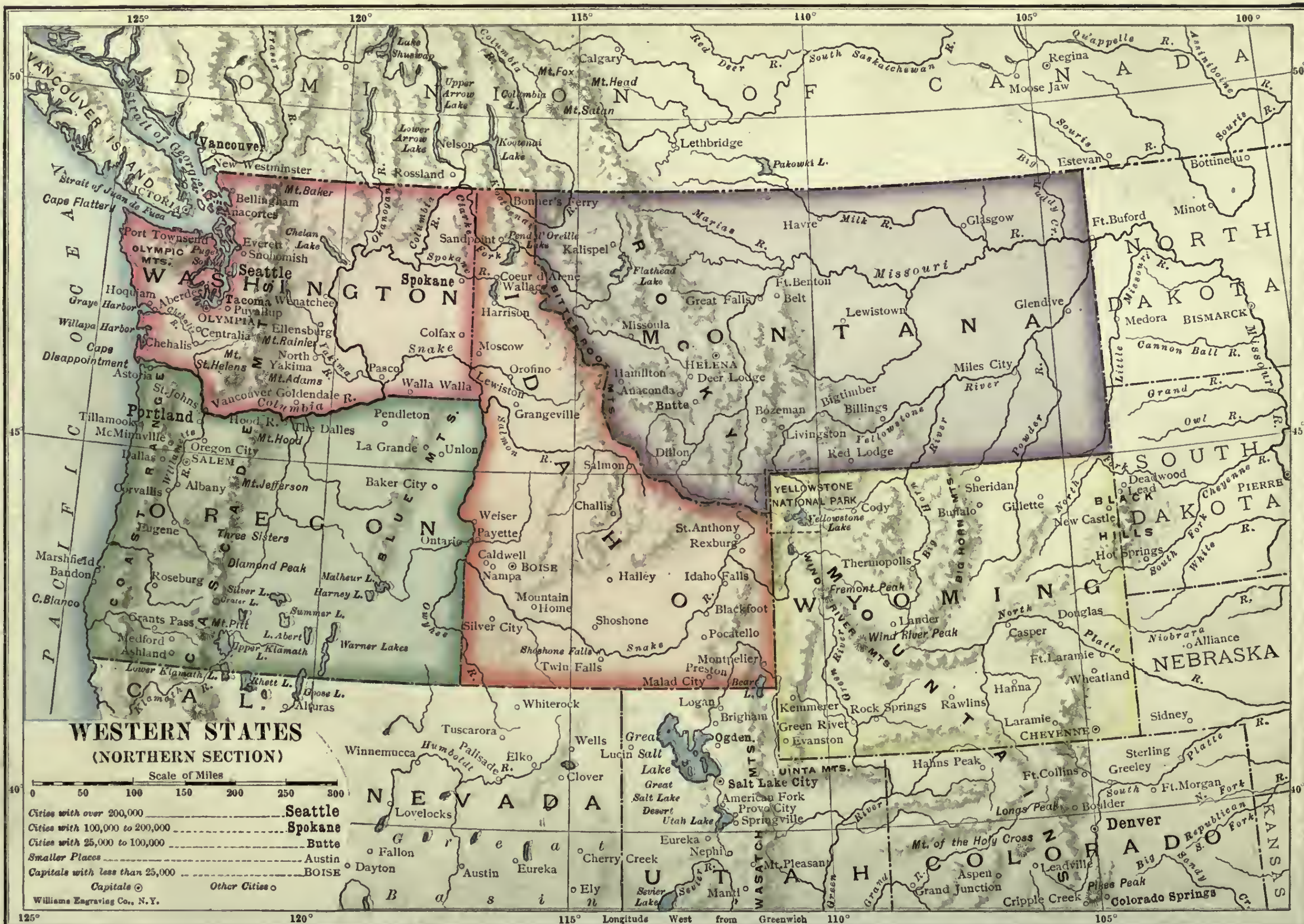

WESTERN STATES
(NORTHERN SECTION)
Scale of Miles
0 50 100 150 200 250 300
Cities with over 200,000 Seattle
Cities with 100,000 to 200,000 Spokane
Cities with 25,000 to 100,000 Butte
Smaller Places Austin
Capitals with less than 25,000 BOISE
Capitals
Other Cities
Williams Engraving Co., N.Y.
Longitude West from Greenwich
DOMINION OF CANADA
WASHINGTON
OREGON
IDAHO
MONTANA
WYOMING
NORTH DAKOTA
SOUTH DAKOTA
NEBRASKA
NEVADA
UTAH
COLORADO
KANSAS
CAL.
PACIFIC OCEAN
Seattle
Spokane
Portland
SALEM
OLYMPIA
BOISE
HELENA
Butte
BISMARCK
PIERRE
CHEYENNE
Salt Lake City
Denver
Vancouver
VICTORIA
Great Salt Lake
YELLOWSTONE NATIONAL PARK
ROCKY MTS.
BITTER ROOT MTS.
CASCADE RANGE
COAST RANGE
BLUE MTS.
BIG HORN MTS.
WIND RIVER MTS.
UINTA MTS.
WASATCH MTS.
BLACK HILLS
Great Basin

FIG. 270.


WESTERN STATES
(SOUTHERN SECTION)
Scale of Miles
0 50 100 150 200 250 300
Cities with over 300,000 ..... SAN FRANCISCO
Cities with 200,000 to 300,000 ..... Denver
Cities with 100,000 to 200,000 ..... Oakland
Cities with 25,000 to 100,000 ..... Pueblo
Smaller Places ..... Tucson
Capitals with less than 25,000 ..... SANTA FE
Capitals ⊙ Other Cities ○
Williams Engraving Co., N.Y.
OREGON
IDAHO
WYOMING
NEBRASKA
NEVADA
UTAH
COLORADO
ARIZONA
NEW MEXICO
CALIFORNIA
SAN FRANCISCO
LOS ANGELES
SANTA BARBARA
ISLANDS
GULF OF CALIFORNIA
LOWER CALIFORNIA
GRAND CANYON
Longitude West from Greenwich

FIG. 270.


PHYSICAL MAP OF THE
WESTERN STATES
Scale of Miles
0 50 100 150 200 250 300
KEY
Over 8,000 ft.
From 2,000 to 8,000 ft.
From 500 to 2,000 ft.
From 100 to 500 ft.
From 0 to 100 ft.
Sea Level
From 0 to 650 ft.
From 650 to 6,500 ft.
Below 6,500 ft.
DOMINION OF CANADA
Lake Winnipegosis
VANCOUVER ISLAND
Strait of Georgia
Strait of Juan de Fuca
Cape Flattery
OLYMPIC MTS.
Puget Sound
Grays Harbor
Willapa Harbor
Cape Disappointment
Mt. Baker
Mt. Rainier
Mt. St. Helens
Mt. Adams
Columbia R.
Mt. Hood
Mt. Jefferson
Three Sisters
Diamond Peak
Mt. Pitt
Mt. Shasta
Lossen Peak
Cape Blanco
Cape Mendocino
Klamath R.
Rogue R.
Umpqua R.
COAST RANGE
CASCADE RANGE
COLUMBIA PLATEAU
BLUE MTS.
BITTER ROOT MTS.
Snake River
Shoshone Falls
Salmon R.
Lake Pend d'Oreille
Coeur d'Alene L.
Flathead Lake
Marias R.
Milk River
Missouri River
Musselshell R.
Yellowstone River
YELLOWSTONE NATIONAL PARK
Yellowstone Lake
BIG HORN MTS.
BLACK HILLS
Fremont Peak
Wind River Peak
Great Salt Lake
Great Salt Lake Desert
Utah Lake
UINTA MTS.
WASATCH MTS.
Sevier Lake
GREAT BASIN
Humboldt River
Reese R.
Walker Lake
Wheeler Peak
Pyramid Lake
Lake Tahoe
Mono Lake
YOSEMITE VALLEY
SIERRA NEVADA
Mt. Whitney
Owens Lake
DEATH VALLEY
San Francisco Bay
Monterey Bay
San Joaquin R.
Sacramento R.
Tulare Lake
Point Conception
SANTA BARBARA ISLANDS
SAN BERNARDINO MTS.
Mohave Desert
Salton Sea
San Diego Bay
PACIFIC OCEAN
Longs Peak
Mt. of the Holy Cross
Pikes Peak
Blanca Peak
Spanish Peaks
Arkansas River
South Platte
North Platte
COLORADO PLATEAU
GRAND CANYON
San Francisco Peak
GILA RANGE
Greens Peak
Salt River
Gila River
Gila Desert
Rio Grande
Rio Pecos
Canadian River
GREAT PLAINS
CENTRAL HIGHLANDS
ROCKY MOUNTAINS
CORDILLERAN HIGHLANDS
LOWER CALIFORNIA
GULF OF CALIFORNIA
MEXICO
Longitude West from Greenwich
Williams Engraving Co., N. Y.

FIG. 272.


WESTERN STATES
Modeled by Edwin E. Howell.
SCALE
0 50 100 200 300

FIG. 271.

Panama; but many traveled overland, running the risk of attack from Indians and of death from hunger and thirst. There were then no railways west of the Mississippi, and the journey was long and dangerous.

The discovery of gold quickly drew many settlers to California; and, as the search for the precious metal was carried farther and farther, the entire West soon became explored and settled. Railways were built across the mountains (Fig. 403), and many industries, such as farming, lumbering, and manufacturing, followed mining.

Fig. 273. — A lake in the picturesque Rocky Mountains of Montana.

Yet the population of these states is now only seven million, while that of the Northeastern and Southern States together is over fifty-five million. This means that the Western States are very thinly settled; in fact, this is the most thinly settled part of our country.

2. Present population

Let us find some of the reasons for this condition. One reason is the far western position of these states. Most of the early settlers in this country came from Europe, and settlements were made first along the eastern coast. It was a long distance from there to the Mississippi River, and it was only after the Eastern States were fairly well occupied that many people crossed the Mississippi to go farther west. Now that the East is so fully settled, more and more people go to live in the Far West.

Reasons for small population

1. Their position so far west

Another reason why there are so few people is the mountainous condition of the country. The Appalachian Mountains greatly hindered early settlers from reaching the fertile valley of the Mississippi. The mountains of the West are far more extensive, and more difficult to cross, than the Appalachians. Instead of one mountain chain, there are four great mountain systems extending north and south, and between them are broad plateaus, some of which are more than a mile above the level of the sea. A large portion of the Western States is plateau country.

2. Their many mountains and plateaus

In traveling westward from the Mississippi, one passes first over the Great Plains, whose height above the level of the sea gradually increases to about a mile. Then come the *Rocky Mountains*, which rise from five to ten thousand feet higher. Note the states that they cross. The name *Rocky* suggests how difficult it is to travel over them, for they are high and very rough.

Extending from these mountains for nearly a thousand miles to the west is a plateau, with one part, called the *Great*

Basin, lower than the rest. On the western side of the Great Basin, in California, are the *Sierra Nevada* ranges; and farther north, in Oregon and Washington, are the *Cascade Ranges*. Before the Pacific is reached, still a third system of mountains, called the *Coast Ranges*, must be crossed. They are separated from the Sierra Nevada by a broad valley. All these Western mountains together are known as the *Western Cordillera*. Their highest peak is Mount Whitney, in California, the loftiest mountain in the United States outside of Alaska.

FIG. 274. — Mount Rainier, in Washington, one of the most beautiful volcanic cones of the West. It is plainly visible from Tacoma.

A third reason for the sparse population is the lack of rain. We have already learned that the western parts of Texas (p. 157) and the states farther north (p. 176) receive too little rain for agriculture.

3. Their lack of rain

There are two reasons for this dryness. In the first place, in the southern portion of these states the winds blow from the land *toward* the Pacific Ocean, not *from* it. They cannot, therefore, carry much vapor, and part of the country is a true desert (Fig. 275).

In the second place, although the winds farther north blow from the Pacific, they soon lose their moisture as they move eastward. They have plenty of vapor when they reach the coast, but as they rise over the mountains, much of this falls as rain or snow. The rainfall is therefore very heavy on and near the Coast Ranges. Continuing eastward, the winds blow over the Sierra Nevada and Cascade ranges, and are there robbed of more moisture. The air then becomes so dry that a large part of the country farther east, as far as the Rocky Mountains, receives very little rain.

FIG. 275. — Desert landscape in southwestern United States. Only scattered plants grow in this sandy waste.

Again, on crossing the lofty Rocky Mountains, these west winds lose still more of their

moisture. This is suggested on the map by the number of large rivers that find their sources in these mountains. Name and trace some of them. As a result, if winds from the Gulf of Mexico and from the Atlantic Ocean did not bring some vapor for rain, the country east of the Rockies might be as dry as the Sahara Desert. As it is, some rain falls even close to the eastern base of the Rocky Mountains, so that this region, though arid, is not a true desert.

Fig. 276. — The desert near Great Salt Lake in Utah.

In the plateau and Great Basin region, which lies between the Sierra Nevada-Cascade System and the Rocky Mountains, the climate, for the most part, is dry or arid. Note the states that are included. In places the climate is so dry that the country is a real desert (Fig. 276).

On these deserts one may travel for scores of miles without seeing vegetation of any kind excepting cactus, scattered blades of grass, and such other plants as grow in dry soil. There are no trees, because of lack of water; and there is little to be seen except sand and rock. It was very difficult for early settlers to cross these arid and desert regions, for there was often no water to drink, and there was little game for food. Almost one fifth of the United States is unfit for agriculture without irrigation, and most of this arid land is in these Western States.

Some parts of this section, however, are well watered. Along the Pacific coast, in particular, from central California to Canada, there is abundance of rain (Fig. 407). Measure this distance. In western Washington, where the west winds rise to pass over the mountains, the heaviest rainfall in the United States occurs.

Agriculture
1. In the region of sufficient rain

This rainy region has also a mild climate and a fertile soil, and is, therefore, a very rich farming country. Fruits of many kinds are raised, mainly peaches, plums, apricots, pears, apples, grapes, and berries; and farther south, in California, oranges, lemons, grapefruit, and figs thrive. In Washington (Fig. 278) and Oregon, east of the mountains, and in the Great Valley district of California, wheat growing is an important industry. The farmers here enjoy one peculiar advantage. Very little rain falls during the harvest season, so that grain may be left out of doors for weeks with little danger of being spoiled. Walla Walla, Wash., Lewiston, Ida., and Pendleton, Ore., are situated in this great wheat region. Large quantities of hay, barley, corn, oats, and vegetables, and many farm animals also, are raised in this well-watered section.

There are other smaller sections where the rainfall is sufficient for agriculture; but the only way in which farming is possible in most other parts of the West is by means of irrigation.

FIG. 277. — Some of the wild animals of the Far West.

FIG. 278. — Cutting wheat in the fertile wheat region of eastern Washington. By this large machine, drawn by thirty-two mules and horses, the wheat is cut, threshed, and put into sacks ready for shipment.

2. In Southern California

(1) *The plan for obtaining water*

The southern half of California, being near the ocean, might be expected to receive abundant rainfall. Indeed, during the winter season the rain often pours down until rushing torrents are formed among the hills and mountains. In the summer season, however, when plants most need moisture, the winds no longer blow from the ocean. On that account, no rain falls in summer, and the southern part of California is then a true desert. This is the case even within sight of the ocean, and where the soil is very fertile.

Why can not some of the rain that falls in winter be stored up then for use in summer, when it is needed? That was the question that men asked, and they set to work to store up the water.

Dams were built among the hills and mountains, collecting the winter's floods into ponds and lakes, and holding the water there till summer came. Then ditches many miles long were dug (Fig. 282), or pipes were laid, leading the water down from these reservoirs to the fertile plains. Smaller ditches were dug from the main ones, leading to the farms in various directions. From these each farmer could turn the water into still smaller ditches on his own land, and, when he wished to do so, could flood his fields (Fig. 283).

Thus, as often as was necessary during the long, dry summer, the crops could be given the water that they needed.

This is what is meant by *irrigation*. It is expensive, but it is even better than rain, because it supplies the exact quantity of water that is needed, and at the time when it is wanted.

(2) *The products*

Irrigation has changed much of southern California from a barren desert into a paradise of flowers, fruit trees, and beautiful homes (Figs. 280 and 281). This is the land from which we get many of our oranges (Fig. 279) and lemons, the other important source being Florida. Seedless or navel oranges come mainly from Califor-

nia. Nearly every home has its orange trees, and in many cases the house is entirely surrounded by them (Fig. 280). Also, quantities of peaches, plums, apricots, pears, apples, grapes, figs, olives, and nuts are raised here, as well as grain, vegetables, and other crops.

Immense quantities of peaches, prunes, apricots, grapes, figs, and other fruits are dried. In the Eastern States fruit would soon decay if left out of doors, but in the sunny climate of the arid

Fig. 279. — Picking oranges in the irrigated country of southern California, near Pasadena.

The groves of all kinds are planted in straight rows, and the ground is kept so clean by frequent plowing that scarcely a weed is to be seen. In this respect the groves present a very different appearance from the orchards, overgrown with grass and weeds, that are often seen upon farms of the East.

(3) *Care of the fruit, and what is done with it*

The winter season is the harvest time for oranges, which are picked from about the middle of November until February, or later (Fig. 279). They are cut from the trees, sorted according to size, then packed in boxes and shipped away.

lands it dries quickly. Much fruit is also canned, and many grapes are made into wine. California wine is of such high quality that it is sent not only to the East, but even to Europe.

The value of irrigation is well shown here. Before irrigation was introduced into southern California, this region could support very few people. Now, in Los Angeles and vicinity, there is a population of several hundred thousand.

One of the chief agricultural regions of the West is the *Great Valley of Cali-*

Fig. 280. — An orange grove in southern California on land which not many years ago supported only the sparse vegetation of an arid climate.

Fig. 281. — This view, near Pasadena, California, shows the barren arid lands, in the midst of which are extensive orange groves, irrigated by water from the mountains.

fornia which lies between the Sierra Nevada and the Coast Ranges. In the north there is rainfall enough for agriculture, but irrigation is necessary in the south. In the central and southern parts of this valley there are groves of oranges, lemons, olives, and figs, as well as other trees that thrive only in warm climates. SACRAMENTO, STOCKTON, and FRESNO are the leading cities of the Great Valley, which, throughout its whole length, is occupied by a succession of wheat fields, vineyards, orchards, and nut and fruit groves. California fresh fruit is shipped in enormous quantities to Eastern cities, while dried and canned California fruits are to be found in most of our groceries.

3. In the Great Valley of California

The influence of irrigation is well illustrated also in the region near DENVER, which lies in the midst of an arid plain. This plain is crossed, however, by the South Fork of the Platte River, from which a ditch, as large as a canal, is led out upon the plain (Fig. 282). The river itself has a rapid fall, but just enough slope has been given the ditch to allow the water to flow. Thus the ditch runs on a higher level than the river, and the land between the ditch and the river is lower than the ditch.

Water from the ditch may therefore be led out over these fields to irrigate them. For this purpose ditches branch off from the main canal, and each of these is divided and subdivided to supply farms along its course. When a field needs water, one of the smaller ditches is tapped and the field is flooded; or else the water is led into little furrows a few feet apart (Fig. 283). The method followed depends upon the kind of crop that is under cultivation.

FIG. 282. — An irrigating ditch near Denver. The water is led from a river, and by it the land, otherwise useless for agriculture, is made to yield rich harvests.

4. In Colorado and Wyoming, by irrigation

(1) *How irrigation is planned near Denver*

Each farmer must pay for his water at a certain rate, as each tenant of a house in the city pays for his water or gas.

(2) *Expense of such irrigation, and its advantages*

That a farmer can afford to pay for water, however, is well shown in this case; for on the upper side of the ditch, which cannot be reached by the water, the land is fit only for grazing, while on the lower side there are rich fields of grain, vegetables, and alfalfa. The latter, like clover and grasses, is fed to stock. It is one of the most important crops of the arid regions, where there is much demand for fodder for cattle, hogs, sheep, and horses.

FIG. 283. — A farmer irrigating his field. The water from the irrigating ditch is allowed to run along the furrows and thus wet the seeds that have just been planted.

Without irrigation, crops could not be grown in this vicinity. It would then be necessary to bring farm products from Kansas, Nebraska, and other states, a distance of several hundred miles. It is evident, therefore, that irrigation must have had a great influence on the settlement of the West. Without it DENVER and PUEBLO would not be so important as they are; and, because of the expense of carrying food so far, scores of mining towns would not exist. Wherever the waters of the rivers are led out over the fields, people form settlements, and even towns and small cities. That is the case at GREELEY, in Colorado; CHEYENNE and LARAMIE, the principal cities in Wyoming; and scores of other places.

The region around SALT LAKE CITY, in Utah, is another irrigated section similar to that just described. A large part of that state was once a desert. But extensive areas have been entirely changed by the Mormons, a religious sect founded in New York, in 1830, by Joseph Smith.

5. In Utah, by irrigation

Under the leadership of Brigham Young these people migrated into the then unknown West and settled a few miles from Great Salt Lake. Here they built SALT LAKE CITY, which is now the capital of Utah, and is one of the beautiful cities of the country.

The mountains, not far away, supply water for irrigation; and fruits, alfalfa, and many other farm products are produced in abundance. Besides Salt Lake City there are many smaller places near by and also the city of OGDEN, the second city in size in Utah.

Great Salt Lake is the largest lake in the Great Basin. Although many streams flow into it from the neighboring mountains, so much water evaporates in this arid region that the lake does not rise high enough to overflow. It has therefore grown more and more salt, until now its water is much salter than the ocean itself. It is so salt, and on that account so dense, that a person cannot sink in it.

The description of these few places serves to show the importance of irrigation in the

West. It is not to be understood, however, that these are the only noted irrigated sections, for there are many others. Most of the larger and better known are along the principal rivers. For example, irrigation is extensively employed along the Yellowstone and Missouri rivers and their tributaries in Montana; along the Snake River and its tributaries in Idaho; along the Yakima River (Figs. 284 and 285), and other streams tributary to the Columbia River in Washington, Oregon, and Idaho; along the Gila and Salt rivers in Arizona; along the Rio Grande and Pecos rivers in New Mexico; and along the Sacramento, San Joaquin and other rivers in California. The map (Fig. 380) shows that there are many irrigated sections.

6. In other irrigated sections

Fig. 284. — Desert land in the Yakima Valley, covered with the worthless sagebrush. Such land is of almost no value; but compare this picture with Figure 285.

In spite of all these facts, the amount of irrigated land in the West is small compared with the amount that is still either desert or dry enough to be called *arid*. Much of this land will probably always remain arid, because no water can be obtained for it.

7. Work of the United States government in irrigation

There is, however, much land, now almost useless, that might be irrigated if the expense could be met. Most of this land still belongs to the United States government, and it is very important that water be brought to it, so that settlers may occupy it and make it produce valuable crops. For these reasons the United States government is now spending millions of dollars in building extensive irrigation works in the West. Some of the largest are in Idaho and Arizona.

One of the completed works is the Roosevelt dam in the Salt River in Arizona, which will supply water for a large area near PHŒNIX.

Enormous dams are being built elsewhere (Fig. 286), forming large lakes in the mountain valleys, from which water may be led in summer, when needed by the crop. This is one of the most important works in which our government is engaged.

Fig. 285. — Land in the Yakima Valley which only a few years ago was covered with sagebrush like that in Figure 284. Now, being reached by an irrigation ditch, it supports a flourishing young peach and apple orchard and is worth $1000 an acre.

8. Ranching

(1) *Kinds of animals raised*

While the greater part of the arid lands is without irrigation, and for that reason is not cultivated, it is by no means entirely useless. Most of it receives rainfall enough for a crop of nourishing grass. This vast arid section, therefore, is valuable for grazing. It is the land of the cattle ranch (Fig. 245) and of the cowboy, who spends most of his time in the saddle looking after his herds. Besides cattle, many sheep and horses are raised, and also goats in regions where there is least grass.

Fig. 286. — A masonry dam built by the United States government, forming a large lake in which water is stored for use in irrigation during the summer.

(2) *How sheep ranching is carried on*

The manner in which cattle ranching is carried on in Dakota was described on pages 182–184, and much the same plan is followed for cattle and horses in all the Western States. Sheep ranching is somewhat different, as may be seen from the ranches about Billings, Montana.

A good-sized sheep ranch has from twenty-five thousand to forty thousand head of sheep. These, like cattle, may feed partly upon government land, or the "range," and partly on land fenced in and owned by the ranchman. During the coldest winter weather, when the snow may be so deep that the sheep cannot obtain food, they are often driven into protected *corrals* and fed on alfalfa. The fierce winds of the open plains help them, however, by drifting the snow, thus leaving open patches where they can find grass.

When the sheep are feeding on the range, one man, with a dog (Fig. 287), can herd twenty-five hundred; and if he has a horse to ride, he sometimes takes care of five thousand. Selecting a spot near water for a camp, the herder drives his sheep out each morning, and back at night, going each day a distance of two or three miles from camp. When the grass in one place has been eaten the camp is moved; then, from the new point as a center, the sheep wander out as before.

The life of the herder is very lonely, both day and night being spent with the sheep. Once a week a man brings him food; but for weeks, and even months at a time, the only company he has, aside from his sheep, is his dog, and possibly his horse.

(3) *Sources of profit*

After the winter is over, the first income to the ranchman comes from the sale of the skins, or pelts, of sheep which have died during the cold weather. Each year he expects to lose from this cause about one sheep in twenty.

Next comes the harvest of wool (Fig. 288). Men who make it their business to shear sheep travel in squads of about twenty-five. They erect sheds and pens near some sheep center, such as Billings, and shear all the sheep that

FIG. 287. — A Montana sheep herder with his dogs and his flock.

are brought to them. Sometimes sheep are sheared at the ranch, but many ranchmen prefer to drive them near to a market before they are sheared. This saves the expense of hauling the wool to the railway station; and besides, the sheep graze on the way to and from the market.

In the Southwestern States sheep are often sheared twice a year; but farther north only once, and then as near the month of June as possible. Can you suggest a reason for choosing that time? After the wool is cut, it is pressed into bales and shipped to various markets in the East. Where should you think it might be sent, and for what purposes used?

From July on, many sheep are sold for mutton. Those that are from three to five years old, and that have already produced a quantity of wool, are usually selected for this purpose. The hides are used for leather and the bones for fertilizing the soil.

Although agriculture is the most important industry in the Western States, it is for mining that they are most noted.

Mining
1. Kinds of minerals

Every one of them contains mineral

FIG. 288. — Shearing sheep in Montana. The men hold the sheep and the wool is clipped off by machinery. There is a great pile of this wool along the middle of the shed.

deposits of some kind, such as gold, silver, copper, lead, mercury, petroleum, and coal; and together they form one of the most important mining districts in the world.

Much gold has been discovered in the river gravels. In many regions it is easy to get the gold out of these gravels, but in some places the stream beds have been covered with a thick blanket of hard rock. Then it is necessary for the miners to tunnel under the rock in order to obtain the gold.

2. Methods of mining gold

FIG. 289. — These powerful streams of water wash the gravel away, and the gold collects in the bottom of troughs, or sluices. This is called hydraulic mining.

The first miners obtained the gold in a very simple manner. Placing some of the stream gravel in a pan of water, they rocked it back and forth in such a way as to cause the heavier particles of gold to sink to the bottom of the pan, while the lighter minerals on top were washed out and thrown away. Most of the gold was in very small flakes, but sometimes the miners found large lumps of gold, called *nuggets*, worth hundreds of dollars. This method of washing away the gravel in pans was called "panning" the gold.

(1) *"Panning" the gold*

Very soon the miners tired of such a slow process. They then invented the far more speedy plan of *hydraulic mining*. By this method a powerful stream of water from the nozzle of a pipe is turned against a gravel bank, washing the gravel rapidly away (Fig. 289). The water, with the gravel and gold, runs into steeply sloping troughs or *sluices*, to the bottoms of which many cleats are fastened. The rushing water carries the gravel over these cleats to the end of the sluice, where it is dropped; but the gold, being so heavy, settles to the bottom of the sluice and is caught behind the cleats. Later it is removed.

(2) *Hydraulic mining*

In this way much gold has been obtained from the gravels of California and other Western States. For example, even the gravel out of which some of the streets of HELENA, Mont., are built has been washed for gold in this way.

The method by which most gold is now obtained is to dig into the solid rock, as in the mining of other metals. The shafts and tunnels follow the veins in which the gold is found mixed with other minerals which are of little or no value. This mixture is gold ore, and there is so little gold in such ore, and it is in such small grains, that one may spend days in a mine looking for it without *seeing* any. The gold ore, like other ores already studied, must be crushed and melted before the gold itself can be obtained.

(3) *The common method now*

One of the most remarkable gold-mining districts in the world is that of the Comstock Lode at VIRGINIA CITY, Nev. The vein is irregular in richness, some parts, called "bonanzas," containing much gold and silver, while others are quite barren. So much metal has been obtained from this single vein that Nevada at one time produced more silver than all the other states put together, and more gold than any other state in the

3. Noted mining districts

(1) *In Nevada*

Union. So many people moved there that Nevada territory became a state in 1864; and Virginia City, though in the midst of a desert, grew to be a thriving city.

As the mines went deeper, hot water, with a temperature of 170°, poured in causing unbearable heat. Ice-cold air was forced in, and machinery and mules were made to do most of the work; but even then men fainted at their posts. Partly because of the difficulty of mining, and partly because of the failure to discover new bonanzas, some of the mines were abandoned and people drifted away, so that for a while the population of Nevada decreased.

With the discovery of remarkable new mining fields, and the reopening of old mines, new towns have sprung up, and Nevada is again the center of great mining activity. It is now one of the leading states in the production of gold and silver. TONOPAH, GOLDFIELD, and BULLFROG are important and rapidly growing mining towns.

years ago there was no town here, and the gold ore, which later proved so valuable, was not recognized as ore. Finally, when some one discovered the gold, thousands of people rushed in from all directions, and a city sprang up almost in a day. This has occurred in many other places. Sometimes the cities have continued to grow, but in many places the mines have given out, and the towns have been abandoned almost as rapidly as they grew.

FIG. 290.—A view in the mining district of Victor, Colorado. There are mines beneath these buildings, and the waste rock removed from the tunnels forms huge banks near them.

(2) *In Colorado*

At present Colorado produces more gold than any other state (Fig. 395), and more silver than any other except Montana. In addition to these metals, Colorado produces much copper, lead, and iron. In the mountains one sees many mines (Fig. 290); but one of the most noted mining districts is near LEADVILLE, a city at an elevation of over ten thousand feet above the sea. Gold, silver, and lead are mined in this locality.

Another well-known mining camp in Colorado is CRIPPLE CREEK. A few

(3) *In Montana*

The western half of Montana is another noted mining section, and this state now leads in the production of silver, is second in copper, and produces also large amounts of lead, gold, coal, and other minerals. HELENA has already been mentioned (p. 216); but no portion of the state is now so important for mining as the region in and near BUTTE (Fig. 291). There the principal metal is copper, although some gold and silver are mixed with the ore. More copper has been produced at the Butte mines than in

Fig. 291. — Smelters in Butte, Montana, where copper is obtained from the ore.

any other mining district in the world. The mines are very extensive, reaching several thousand feet into the earth, and having tunnels through which one might wander for days without finding his way out.

The mining industry of Arizona is also very important, much copper, silver, lead, and gold being produced. Arizona now leads in the production of copper, Montana and Michigan being next in rank. One of the largest cities in the territory is Tucson (Fig. 292). Another large city is Bisbee, the center of a noted copper mining region that rivals Butte, Montana. There is much smelting at Douglas, and all these cities, as well as Phœnix, are trade centers for neighboring mines and irrigated farms.

(4) *In other Western States*

There is much mining, especially of gold, silver, copper, and lead, in each of the other Western States. California ranks second among our states in the production of gold, and both Utah and Idaho rank high in the production of silver and lead. The Cœur d'Alene mining district of northern Idaho is the most important silver-lead district in the country (Fig. 293). Spokane, in Washington, is the trade center for this noted mining region, and this has had much to do with the remarkable recent growth of this city. In addition to the metals mentioned, these states, as well as Wyoming and New Mexico, produce large quantities of other valuable minerals. There are many important mining towns and mining camps in each of these states.

Fig. 292. — Tucson, Arizona, which owes much of its prosperity to the rich mines in the neighboring mountains.

FIG. 293. — Miners at work underground in one of the silver-lead mines of the famous Cœur d'Alene district of Idaho.

4. Coal, petroleum, and other minerals

Coal, some of it of excellent quality, occurs in many places, and is mined in most of the Western States. The greatest amount comes from Colorado, which ranks eighth in coal production among the states of the country. Among Western States, Wyoming and Washington are next in importance in coal production.

Petroleum is another valuable product in the West. Enormous quantities have been found in California, and that state and Oklahoma now produce more than any others in the Union. It is extensively used on railway locomotives, in place of coal.

There are many other mineral products in the Western States, including building stones and semi-precious stones. Iron is found in several of these states, but as yet it is not mined to a great extent. With increase in manufacturing these stores of iron will doubtless be valuable.

5. The prospector

Much of the mining land in the West belongs to the government, and when a person finds a valuable deposit of metal, he can obtain a title to the land from the government. This has led many men, called *prospectors* (Fig. 294), to spend their lives roaming about over the Western plateaus and mountains seeking, or *prospecting for*, deposits of metal.

In some parts of the West travelers can see, even from the car windows, scores of little tunnels dug into the sides of the mountains by prospectors who have been hunting for ore. It is a hard, lonely life that such men lead, and it is full of danger. Most prospectors fail to find valuable deposits; but once in a while one discovers a rich vein, and suddenly finds himself a wealthy man.

FIG. 294. — A prospector with his burros, loaded with tools and supplies. In the mountains of Arizona.

Lumbering

1. The special demand for lumber

Mining gives rise to much lumbering in many parts of the West. Millions of feet of lumber are used each year in the Butte mines alone. In the mines heavy, upright timbers are placed close

together, on each side of a tunnel, to prevent the rock from caving in. Because of the great pressure upon them, timbers more than a foot through are often broken.

2. Location of the forests

While a great portion of the Western country is arid, and can support no trees, the mountains and some of the higher plateaus bear extensive forests. Hence the logs are easily brought down to the mines, which are usually among high mountains.

3. Kinds of trees, and their size

The most noted lumber region, however, is on and near the western coast, from central California northward.

Here, in the mild, damp climate, the largest trees in the world are found, and some of them have been growing for a thousand years or more. Among these are the giant redwood, the fir, cedar, and spruce. The redwood is found only in California, where there are extensive forests of these *big trees* (Fig. 295).

FIG. 295. — One of the "Big Trees" of California — so large that a wagon road passes through a tunnel cut in its trunk.

There are immense forests of giant trees all the way from central California to Canada. While the logs in Maine and Michigan are rarely more than two or three feet through, many in Washington and Oregon are from six to fifteen feet in diameter, and some in California are very much larger. Some of these are as large around as an ordinary "living room," and several have been found that are more than ninety feet in circumference, which is as great a distance as that around many a schoolroom. The main limb on one of these trees, called the Grizzly Giant, starts from the trunk two hundred feet above ground, and measures six and one half feet in diameter, or more than most large trees in the East.

4. Method of lumbering

A visit to a lumbering camp in western Washington will show that, owing to the size of the trees, and to the climate, the work is carried on very differently from lumbering in Maine (p. 118). The men are able to work both winter and summer. Selecting a tree, which perhaps towers upward for two hundred feet, — that is, higher than most church steeples, — two men saw and chop it until the giant begins to quiver; and when finally it falls, a wonderful sight may be seen. The tree bends slowly over, quickens its movement, then crashes to the ground, breaking good-sized trees in its way as if they were twigs.

After the branches are cut off, the tree is sawed into sections of different lengths, and these are dragged to a railway which leads up into the forest. There the logs are piled upon flat cars and taken to the mills, a single section of a log sometimes occupying an entire car (Fig. 297). From five to fifteen thousand feet of lumber, or enough to build a small house, may be obtained from a single large tree. From Figure 298 you can see how thick some of these trees are.

FIG. 296. — Lumbermen at work in the forest of western Washington. Note in the foreground the donkey engine used for drawing logs.

Many of the logs go to TACOMA and SEATTLE, where there are enormous sawmills. There is such an abundance of wood in this region that in some places thick planks are used for paving the streets; and wood is burned as a

FIG. 297. — A train drawing lumber out of the forest of western Washington. Each section of a log occupies an entire car, and all the logs in the picture are parts of a single tree.

fuel in locomotives, and in the lumber mills. Such enormous quantities of lumber are obtained from these forests, and so cheaply, that it is sent even as far east as to the Atlantic coast. The Northwest is now the leading lumbering region in the country, and all the cities there have some share in the industry.

5. What is done with the logs and lumber

Much lumber is sent away by boat from PORTLAND and ASTORIA, but even more goes from the cities of Puget Sound. Besides SEATTLE and TACOMA, the cities of EVERETT and BELLINGHAM also are noted for their lumber industry.

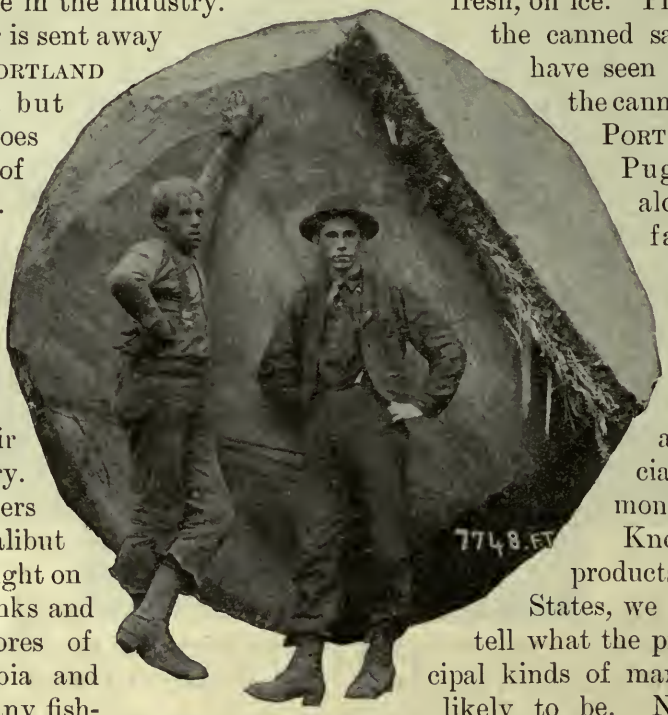


FIG. 298. — The end of a log cut from the forest of western Washington. You can see how large it is by the men standing in front of it.

Large numbers of cod and halibut are caught on the banks and along the shores of British Columbia and Alaska, and many fishing vessels go there, especially from Seattle. Not all the fish that are thus caught are eaten by the Western people. For instance, fresh halibut, kept on ice in refrigerator cars, are sent from Seattle to many places in the East.

Fishing

The most important fishing industry, however, is that of salmon catching. This fish, like the shad of the Eastern States, spends most of its life in the ocean, but passes up the rivers to spawn, or lay its eggs, in fresh water. As they are going toward and up the rivers, the salmon are caught in great numbers. Many run up the Columbia River, so that salmon fishing is very important there (Fig. 299). Trace this river.

Most of the salmon caught are canned (Fig. 300), though some are sent away fresh, on ice. Probably much of the canned salmon that you have seen has come from the canneries either near PORTLAND, Ore., on Puget Sound, or along the coast farther north. ASTORIA, on the lower Columbia, and BELLINGHAM, on Puget Sound, are noted especially for the salmon industry.

Knowing the raw products of the Western States, we can tell what the principal kinds of manufacturing are likely to be. Name the chief raw products.

Manufacturing

Wheat is ground into flour in many places, partly by means of water power. Quantities of grapes, peaches, apples, and other fruits are either canned or dried, and many grapes are made into wine, especially in California. Lumbering gives rise to much manufacture of boards, shingles, furniture, and other articles. In some of the larger cities, the hides of cattle and sheep are manufactured

1. Manufactures from products of farm, forest, and ranch

FIG. 299. — Salmon fishermen in the Columbia River, near Astoria, showing the large salmon caught in their nets.

into boots, shoes, and gloves, and the wool of sheep into woolen cloth; but still greater quantities of these raw materials are sent to the East for manufacture.

2. Manufactures from the products of the mines

Many iron and steel goods are made along the Pacific coast and in Colorado (Fig. 301), as well as at some other points. The ores of gold, silver, copper, and lead are too heavy to haul far. Therefore, in order to get the metals from the ores, these are crushed and melted at many points. For example, the mines near LEADVILLE send their ore to that city, but many mines in Colorado ship ore to the smelters at DENVER and PUEBLO. The buildings in which the crushing is done are called *stamp mills*, and those where the ore is melted are called *smelters* (Fig. 291). Since mining is so prominent in the West, this kind of manufacturing is carried on very extensively.

3. The future of manufacturing in the West

On the whole, manufacturing has not been so greatly developed in these states as in those farther east. It is rapidly increasing, however ; and, since there

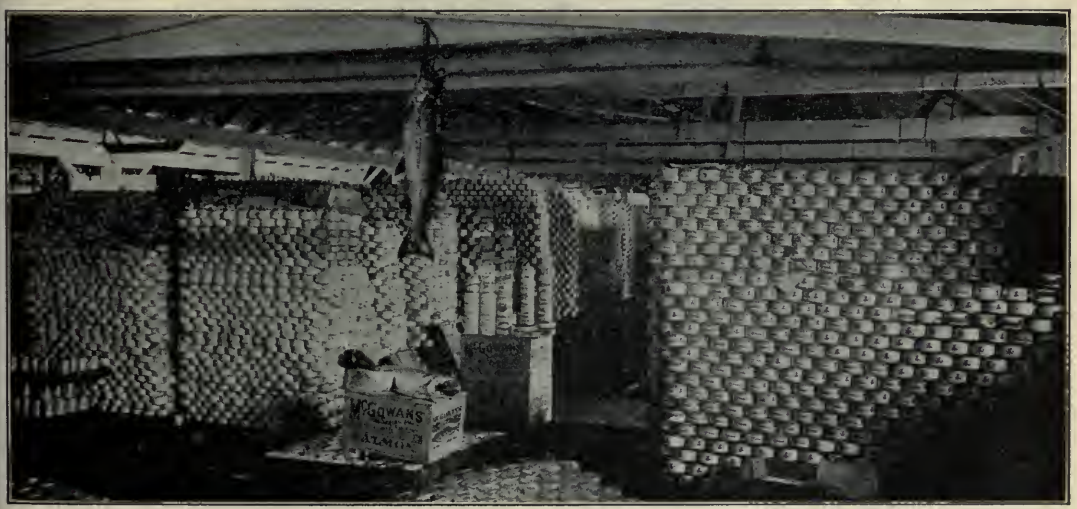


FIG. 300. — Interior of a salmon cannery on the Columbia River. A salmon hangs from the roof; and there are thousands of cans of salmon piled up on the floor.

is much water power and coal in the West, it will doubtless continue to increase. Indeed, it seems probable that parts of this region, especially along the coast, will, at no very distant time, rank high among the manufacturing districts of the country.

Fig. 301.—Blast furnaces and steel works at Pueblo, Colorado.

Transportation of goods to and from the Far West was at first provided by means of wagons, slowly toiling across the country, or by ships that sailed around South America.

1. Harbors

The harbors along the Western coast, such as make ocean transportation possible, are not numerous, but several of them are excellent. One of the best is that of San Francisco. It has much the same importance on the Pacific coast that New York harbor has on the Atlantic. Southeast of San Francisco there is no very good natural harbor until San Diego is reached. How many hundred miles is that? North of San Francisco there is no very good harbor until the Columbia River is reached. Here is located Portland, a hundred miles from the coast on the Willamette River, near its junction with the Columbia. Farther north still, in Washington, is Puget Sound, with many fine harbors. Here are found Seattle and Tacoma.

2. Trade with foreign lands

Partly on account of these excellent ports, an extensive trade by water has sprung up with distant parts of the world. One of such regions is Alaska. Thousands of persons have gone to this northern land, and for supplies they depend mainly upon the seaports of our western coast.

The trade with Asia has also been rapidly increasing. It seems probable that, in the future, trade with Asia will have much the same importance for cities on the Pacific coast that trade with Europe has had for cities on the Atlantic coast. No doubt the Panama canal will greatly increase the trade of the West with our Eastern States and also with Europe. Why?

3. Rivers and railroads

For transportation of goods in the interior the rivers have been of little use. This is partly because they are few and for the most part shallow. It is partly because many of them descend rapidly to the sea, and therefore have rapids and falls that prevent navigation. Notable exceptions are the lower Sacramento and the Columbia, on which rivers boats carry on an extensive commerce.

Railroads, therefore, are of special value in these states; and there is a remarkably large number of them, considering the difficulty of building them (Fig. 302) and the recent settle-

ment of the country. On Figure 403, observe that each of the great cities on the coast is connected by rail, not only with the others, but also with the East, by one or more railways. Count the railroads that cross the Western States, and learn their names. Since they cross the continent they are called *transcontinental* lines (*trans* = across). When the Union Pacific, the first of these, was completed, in 1869, it was thought to be a wonderful work, and of enormous importance; but now there are so many railroads that people are apt to forget their great value.

FIG. 302. — A railroad in one of the canyons in the Rocky Mountains of Colorado.

Leading cities on the coast

1. San Francisco and cities near by

(1) *Names and locations of these cities*

The largest city in the Western States is SAN FRANCISCO (Fig. 303), located on a remarkably fine harbor, at the tip of the peninsula that shuts in the waters of San Francisco Bay. There are other important cities near San Francisco, two of which are ALAMEDA and OAKLAND. The latter, which is much the larger, is the land terminus of several transcontinental railways, and the center of large manufacturing and shipbuilding industries. Close to it is BERKELEY (Fig. 303), the seat of the University of California.

South of San Francisco is SAN JOSE; northeast of San Francisco, on the Sacramento River, is SACRAMENTO, the capital of California; and east of San Francisco is STOCKTON, at the head of navigation on the San Joaquin River. Trace these rivers, and observe the extent of the fertile Great Valley through which they flow.

(2) *Their manufactures*

The enormous crops of wheat, fruit, and wool in the Great Valley of California suggest some of the occupations in these cities. Among them are the canning of fruit, the milling of flour, the making of wine, and also of cloth.

The mineral products in this region have led to much smelting, and to the manufacture of metal goods of various kinds. In and near San Francisco, foundries and machine shops are numerous, and shipbuilding is a great industry. One of our best-known battleships, the *Oregon*, was built here.

There is much sugar refining here, the raw sugar coming from the Hawaiian Islands. The refining of petroleum is another important industry; and brewing, distilling, and the manufacture of boots, shoes, and clothing are still others.

No great amount of coal is mined in California, but, since this state produces such large quantities of petroleum, there is an abundance of oil for fuel. Coal is easily brought by train and boat from the Washington coal fields; and in the mountains there is an abundance of water power that can be used in generating electricity.

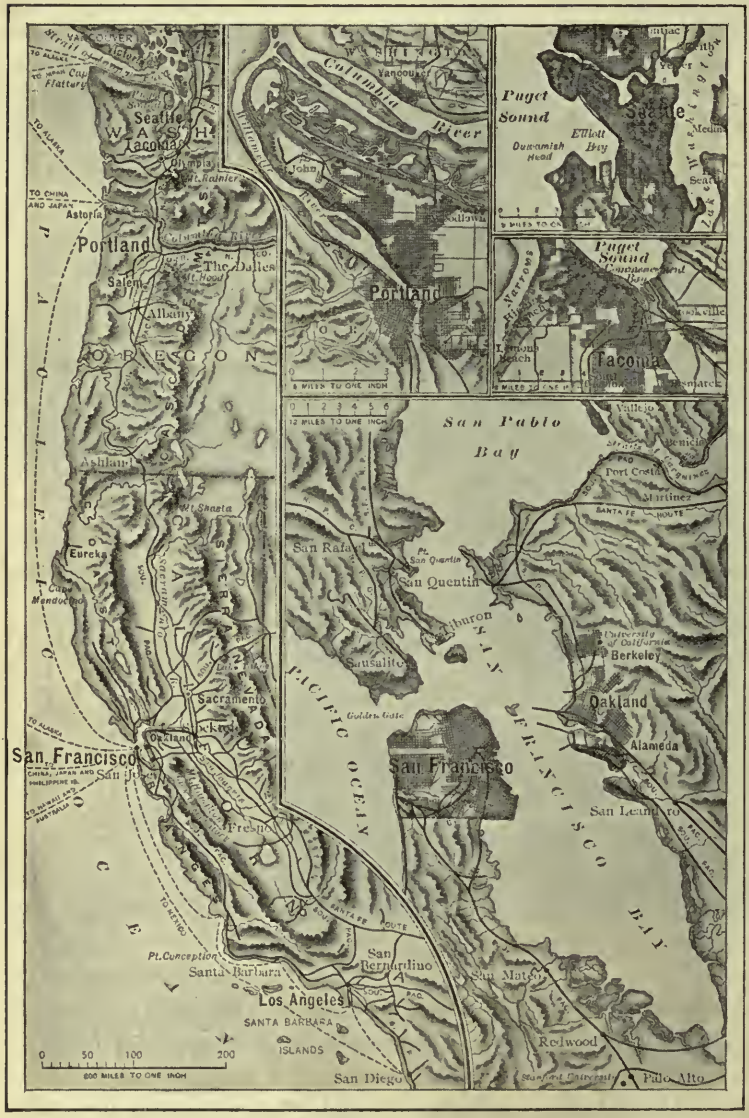


FIG. 303. — Map to show the location of San Francisco, Portland, Tacoma, and Seattle.

San Francisco Bay (Fig. 304) is the only gap in the Coast Ranges for hundreds of miles, either to the north or to the south; and since it is one of the finest harbors in the world, it is very important as the outlet to the Great Valley and the mining regions round about it. The principal products shipped from here are gold, silver, wine, fruit, wool, grain, and the various manufactured goods named above. Some of these go east by rail, but many go by boat to different parts of the world. For all these reasons this is a great shipping point; and, as our trade increases with the Philippines, the Hawaiian Islands, Japan, China, and other countries bordering the Pacific, the amount of shipping will increase.

(3) *Their shipping*

Many goods are sent from Stockton, Oakland, and other points on or near the bay; but San Francisco is the leading center for the shipping, as for the manufacturing.

The next important harbor south of

FIG. 304. — The Golden Gate, as the entrance to San Francisco Bay is called. Outside is the open ocean, while within is a broad, deep bay, protected from winds and waves and making a port where the largest ships may safely anchor.

2. Coast cities south of San Francisco

San Francisco is the port of Los Angeles, a fine artificial harbor that has been made at great expense. Still farther south is the fine natural harbor of SAN DIEGO. Estimate the distance of these points from San Francisco (Fig. 303).

Los Angeles is one of the most beautiful cities in the United States (Fig. 306). It lies in the midst of the rich orange country (Fig. 280), and there are scores of small villages, towns, and cities round about it. Among the larger of these are PASADENA, POMONA, RIVERSIDE, REDLANDS, and SAN BERNARDINO. Los Angeles is the chief distributing center for this productive region. Both San Diego and Los Angeles have attracted many people because of the climate.

The first large city north of San Fran-

FIG. 305. — A part of the water front of San Francisco, where the ferries from Oakland are all the time going and coming.

cisco is PORTLAND (Fig. 303) on the Willamette River, a tributary of the Columbia. Like New Orleans, it is situated about a hundred miles from the ocean, near the head of deep-water navigation.

3. Coast cities north of San Francisco
(1) *Portland and vicinity*

Since good harbors having connections with the interior are lacking, most of the other important towns of Oregon are inland, and Portland has grown to be the chief shipping point by water, and therefore the largest city in the state. From this point wheat, flour, fruits, wool, and lumber, the leading products of Oregon, are shipped in great quantities.

Portland has extensive manufactories of woolen goods, flour, and furniture; and SALEM, the capital, situated in the fertile Willamette Valley, also has large woolen and flour mills. Near the mouth of the Columbia is ASTORIA, where, as elsewhere along the river, the salmon industry is developed. It is also an important shipping point.

Portland, one of the most beautiful cities in the West, is growing rapidly in industry, commerce, and population, its recent growth being most remarkable. It has an extensive and increasing trade with the Orient, and also important commerce with Alaska. Portland is one of the great lumber ports of the world, and one of the leading wheat and flour shipping points on the Pacific coast.

FIG. 306. — A street in Los Angeles bordered by palms and other warm-climate trees.

Washington, unlike Oregon, has many fine harbors. On two of these SEATTLE and TACOMA (Fig. 303) are situated. Coal, lumber, grain, and hops are the principal exports. There is also extensive manufacture of lumber, furniture, and other goods along the shores of Puget Sound, especially at Seattle (Fig. 308) and Tacoma. There is a large smelter at Tacoma, to which ores are sent from even as distant a point as Alaska; and

(2) *Cities on Puget Sound*

shipbuilding is an important industry at Seattle.

The cities of Puget Sound, especially Seattle, have the bulk of the trade with Alaska, as well as much commerce with the Orient. To Puget Sound ports most of the gold, salmon, and other Alaskan products come, and from these ports the regular Alaskan steamers sail, carrying many miners and other passengers, and large cargoes of goods for use in that Northern territory. Seattle is the place of outfitting for most of the people who go to Alaska; and the rapid development of that territory has brought much business to this city. Consequently its recent growth has been remarkable. Both Tacoma and Seattle are beautifully situated on the shores of Puget Sound, and from both, the extinct volcano, Mount Rainier, is plainly visible.

FIG. 307. — The city of Portland, with the lofty and beautiful snow-covered peak of the volcano, Mt. Hood, in the distance.

Other important cities on Puget Sound are BELLINGHAM, which has the largest salmon cannery in the world, and EVERETT. OLYMPIA, the capital of Washington, is on a branch of Puget Sound.

Leading cities in the interior

1. Denver and Colorado Springs

The greatest of the interior cities of the Western States is DENVER, the capital of Colorado. This city is located on the site of a small mining camp. Its growth is due chiefly to two conditions: (1) the numerous

FIG. 308. — A view of a part of Seattle from the water. Note the great amount of shipping in this busy port.

mining towns among the mountains near by; and (2) the near presence of water, which has made irrigation on a large scale possible (p. 211). The first condition calls for an important trade and manufacturing center somewhere in that region, and the second makes it possible to secure food in the vicinity.

Denver has now become a very important railway and manufacturing center, where ore is smelted, and machinery, flour, and cloth are manufactured. It is also of importance as a health resort, for the altitude of more than five thousand feet, and the dry climate, are especially favorable to persons suffering from diseases of the lungs. COLORADO SPRINGS, south of Denver, at the base of Pike's Peak (Fig. 309), is one of the leading health resorts in the country.

FIG. 309. — Pike's Peak from the Garden of the Gods, near Colorado Springs.

PUEBLO, a trade and manufacturing center, is situated south of Denver, where the Santa Fé Railway meets the Denver and Rio Grande. Here much ore is smelted, and iron goods are manufactured (Fig. 301). It is the nearness to coal and iron ore that makes the latter industry profitable.

2. Pueblo

SPOKANE, in eastern Washington, is situated on the Spokane River at a point where there is a large waterfall (Fig. 310). This supplies abundant water power, so that there is much manufacturing. Since the city lies in the midst of the fertile wheat region of eastern Washington, flour milling is extensive, as at Minneapolis. From the forests of Idaho the city receives lumber; and, as already mentioned, it has been greatly benefited by the rich mines of the nearby Cœur d'Alene district. Spokane is also an important railway center and distributing point for a wide area of country. It has grown very rapidly, and is now second in size among the interior cities of these states. Two other cities in the interior of Washington are WALLA WALLA, in the southeast, and NORTH YAKIMA in the Yakima Valley.

3. Spokane

Much of the ore mined at BUTTE (p. 217) is crushed and reduced in smelters within the city limits. But much also is sent to the smelters of ANACONDA, and a large part of the Montana ores go to the smelters at GREAT FALLS.

4. Butte, Anaconda, and Great Falls

BUTTE is a good example of a flourishing *mining center*.

When a rich vein of metal is discovered many men are needed to work it; some to dig out the ore, others to crush it in the stamp mills,

and still others to reduce it in the smelters. Thus a good-sized town may quickly spring up about a single rich vein. Very often, too, where there is one rich mineral vein, there are others close by, so that a group of mines may be opened near together. Then a mere mining camp may quickly become a large city. That is what happened in the case of Butte. It is a great copper-mining center, and, since the ore contains some silver, this precious metal is also produced.

There are many mines at Butte, even within the city limits. Some of the shafts reach thousands of feet down into the earth, and the tunnels that are left underground when the ore has been removed are, taken together, hundreds of miles in length. Hundreds of men there spend most of their lives far underground, coming up to the surface only to eat and sleep. Many men are also employed in the smelters. There are scores of such mining centers in the West, although most of them are only small towns, or "camps."

FIG. 310. — The falls in the Spokane River, around which the city of Spokane has grown.

Several other interior cities, such as SALT LAKE CITY and OGDEN, have already been mentioned (p. 212). Find others on the map. Most of these owe their importance chiefly to mining, farming by irrigation, and grazing. Name the capitals of the Western States. Which of these have been mentioned, and in what connection?

5. Other cities and towns in the interior

Locate BOISE, the capital of Idaho, a city in the midst of a fertile irrigation district.

In many places among the Western mountains are scenes that compare favorably with those of the Alps in Switzerland, which attract so many American travelers. Strangely formed cliffs, deep canyons, and great waterfalls are present without number. There are also snow-capped mountains and wooded valleys. Many of the wonderful gorges (Fig. 302), and canyons through which the Denver and Rio Grande Railway winds its way across Colorado, may be viewed from the railway. Among all the interesting places in the West, however, are three that easily surpass the others in grandeur. These are the Yellowstone National Park, the Grand Canyon of the Colorado, and the Yosemite Park.

Scenery in the West

1. The most noted places

The Yellowstone Park, chiefly in Wyoming, is a tract of land larger than Connecticut, which the government has set aside as a national park. It is often called the "Wonderland of America."

2. The Yellowstone Park

(1) *Its hot springs and geysers*

FIG. 311. — "Old Faithful" geyser in eruption.

A stage road leads from the Northern Pacific Railway to the Mammoth Hot Springs on the northern side of the park. There is also a stage route from the Oregon Short Line on the western side. At the Hot Springs heated water flows from openings in the hillside, down over beautiful colored terraces, which have been built by a deposit of mineral matter carried in solution in the hot water. Farther on are springs of boiling water; also springs of boiling mud of different colors; and here and there is a spring, called a *geyser*, from which hot water and steam now and then burst forth with great violence, even to a height of one hundred to two hundred feet (Fig. 311).

"Old Faithful," one of the most regular of these geysers, "plays" at intervals of sixty-five minutes. Then a column of steam and hot water shoots upward from one hundred to one hundred and thirty feet. Other geysers discharge at much longer periods, as two to three hours, or several days; and in some of the geysers the roar of escaping steam lasts for hours after the water has been expelled. The outbursts are really explosions of steam, the heat being supplied from the depths of the earth. Some of the springs are on a level with the ground, so that a visitor must be on the lookout lest he step into one; others are surrounded by rims several feet high.

Beyond the geyser basins lies the Yellowstone Lake, a beautiful sheet of

FIG. 312. — The great falls of the Yellowstone, three hundred and eight feet high.

FIG. 313. — A grizzly bear in the Yellowstone National Park.

water, nestled in the mountains, nearly eight thousand feet above the sea. Its waters flow northward, forming the Yellowstone River, a tributary of the Missouri.

(2) *Its lake, falls, and canyon*

To many persons, the falls and canyon of this river are the greatest wonders of the park. Soon after leaving the lake, the stream narrows and quickens, and then the water leaps one hundred and nine feet directly downward. A short distance farther on it tumbles three hundred and eight feet, or almost twice the height of Niagara Falls (Fig. 312). The river then runs between steep walls, which rise one thousand feet above it. This canyon is somewhat winding, with numerous bold cliffs jutting far out into the abyss. From these cliffs grand views may be obtained. Far below, one sees the silvery stream, too distant to be heard as it dashes along. Across the chasm, a half mile away, dark green pines fringe the bank, and between the water and these woods are gorgeously colored rock walls, having all the tints of the rainbow.

In this park hunting is forbidden, and for that reason wild animals are numerous and quite tame. When driving through the park one can sometimes see elk by the roadside; and bears (Fig. 313), both grizzly and black, come close to camps and hotels for food. There are many other animals here also, among them some bison, or buffalo (Fig 314).

(3) *Its animals*

One portion of the Grand Canyon of the Colorado, in Arizona, may be reached by the Atchison, Topeka, and Santa Fé Railway. The wonderful Yellowstone Canyon, just described, and the canyons on the Denver and Rio Grande in Colorado, are pygmies compared with this (Fig. 315).

3. The Canyon of the Colorado River

As one first looks out into the canyon, one sees nothing but rock towers, pinnacles, many colored layers of rock, and apparently bottomless depths. When he finally reaches a point from which the threadlike stream may be spied at the bottom of the abyss, a mile below,

FIG. 314. — Bison feeding in the Yellowstone National Park.

it seems almost impossible that so little water could have wrought such mighty havoc. Yet this river has been slowly cutting its way into the rocks for thousands of centuries, and this great gash, or canyon, is the result.

The difficult path which leads to the bottom of the canyon is seven miles long, and the trip down and back is a full day's journey; but without making it, one fails to appreciate fully the marvelous carving, sculpturing, and coloring of the canyon walls. At the bottom the scene is entirely changed; and, as one looks upward, to see himself shut in by walls which seem to extend to the very heavens, his own littleness and the immensity of the works of Nature are wonderfully impressed upon him.

FIG. 315. — The Canyon of the Colorado, a gash of over a mile in depth cut by the river in the solid rock.

For three hundred miles the Colorado River flows at the bottom of this deeply cut canyon, which forms a very complete barrier to travelers. A person living on one side, where he could see across to the other side, ten miles away, would need to travel hundreds of miles to reach that side; for no railways, roads, or paths can cross it. The government has set aside this wonderland also as a national park for the enjoyment of the people.

4. The Yosemite Park

The remarkable Yosemite Valley, on the western slope of the Sierra Nevada Mountains, in California, presents very different views from those thus far described. This is the region of the High Sierras, with their deep canyons and granite peaks, one of which, Mt. Whitney, 14,898 feet high, is the highest point in the United States, not including Alaska. Some of the most magnificent views in the High Sierras are formed by waterfalls of the Yosemite Creek and Merced River, in Yosemite Park (Fig. 316). In one mighty leap the water descends fifteen hundred feet, forming the Yosemite Falls, which are famed the world over. Below this are some cascades, then another fall of four hundred feet.

Only a few miles from the falls are the giant trees of the world, the largest of which is 35 feet in diameter and 300 feet high. The Yosemite region, like the Yellowstone, is a public park, and is visited every year by thousands of people, including many Europeans.

5. Other wonderful scenery

It would require many pages to describe all the wonderful scenes in Western United States, or even to make a list of them. But mention must be made of the Shoshone Falls in Idaho,

FIG. 316. — The Yosemite Valley, bordered by lofty granite precipices, over one portion of which the water leaps to form the far-famed Yosemite Falls.

Lake Chelan in Washington, Lake Tahoe in the Sierra Nevada, and Crater Lake in Oregon — the great crater of an extinct volcano in which a beautiful lake is now situated. Also the Rainier National Park, on the slopes of Mount Rainier, deserves mention with its beautiful valleys, large glaciers, and grand mountain scenery.

6. The Red Men

Many people from the East are much interested in the Indians, who live on *Indian reservations*, or land reserved for them by the government. Among the most interesting of these are the Pueblo Indians in Arizona, who still live after the manner of their ancestors. Their homes, called *pueblos*, are built of sun-dried clay, or adobe, and in some cases are entered from the roof by means of ladders.

The pueblos were intended as strongholds for the storing of grain, and for protection against wandering tribes, who might

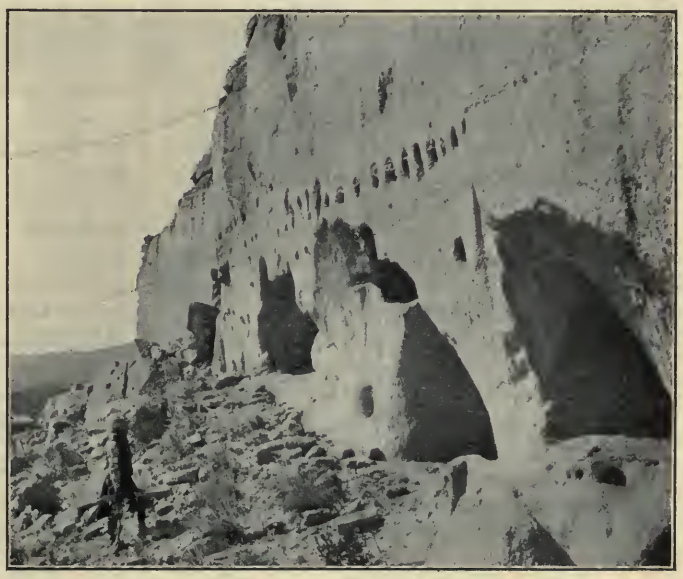


FIG. 317. — The cave dwellings of the southwest. The Indians dug these caves out of the solid rock and lived in them.

attack them at any time. Other Indian houses, the *cliff dwellings*, were built on the sides of cliffs beneath overhanging ledges; and still others, *cave dwellings*, were in caves dug out of the rocks by the Indians (Fig. 317). These cliff and cave dwellings are no longer occupied.

Review Questions

1. What was the effect of the discovery of gold in California upon the population of these States? 2. What is their present population? 3. Explain how their far western position has been one reason for so small a population. 4. Explain how their many mountains and plateaus have been a second reason. 5. Show how the lack of rain has been a third reason. 6. Where are the heaviest rains in this group of states? Why there? 7. Tell about the agriculture in that section. 8. Why is there so little rain in southern California and further east? 9. How is irrigation planned? 10. What are the farm products in Southern California? 11. How is the fruit cared for, and what is done with it? 12. What can you tell about the Great Valley? 13. How is irrigation planned near Denver? 14. Explain the expense of such irrigation, and its advantages. 15. Tell about agriculture in Utah. 16. In other irrigation sections. 17. How is our national government aiding irrigation in these states? 18. What kinds of animals are raised in the arid parts of these states? 19. How is sheep ranching carried on? 20. What are the sources of profit? 21. Name the most valuable minerals mined in these states. 22. Describe the methods of mining gold. 23. Tell about the mining in Nevada. 24. In Colorado. 25. In Montana. 26. In other western states. 27. What about coal, petroleum, and other minerals in these states? 28. Describe the work of the prospector. 29. Why is there a special need of lumber in these states? 30. Locate the principal forests. 31. Name the kinds of trees, and tell about their size. 32. Describe the method of lumbering. 33. What is done with the logs and the lumber? 34. What do you know about the fishing? 35. What are the principal manufactures from the products of the farm, forest, and ranch? 36. From the products of the mines? 37. What is the prospect for manufacturing in the West? 38. Tell about the principal harbors on our Pacific coast. 39. About our trade with distant countries. 40. State the value of the rivers and railroads for transportation of goods. 41. Name and locate the principal cities near San Francisco. 42. What are the principal manufactures in that section? 43. What can you say about the extent of the shipping? 44. Tell about the coast cities south of San Francisco. 45. About Portland and vicinity. 46. The cities on Puget Sound. 47. Denver and Colorado Springs. 48. Pueblo. 49. Spokane. 50. Butte, Anaconda, and Great Falls. 51. Other cities and towns in the interior. 52. Name and locate the three places in the West most noted for grand scenery. 53. Tell about the hot springs and geysers of the Yellowstone Park. 54. About its lake, falls, and canyon. 55. Its animals. 56. Give your impression of the appearance of the Grand Canyon of the Colorado River. 57. Of the Yosemite Park. 58. Name and locate other places in the West where there is wonderful scenery. 59. Tell about the Indians.

Review Questions by states

Montana (Mont.). 1. What industries are carried on in the eastern part? Why? 2. In the western part? 3. Name the chief cities in Montana, and tell how each is important. 4. What two large rivers drain this section? 5. Through what states do they flow before reaching the Gulf? 6. Draw an outline map of the state and, as each of the other states is studied, do the same for that.

Wyoming (Wy.). 7. What industries are carried on in this state? 8. What cities are mentioned? In what connection? 9. Find the Yellowstone Park, and tell for what it is noted. 10. This state is represented as having little grain, on the maps showing the principal grain-producing regions (Figs. 371 and 373). Why?

Colorado (Col. or Colo.). 11. Examine Figures 371 to 373 to see what are the industries of Colorado. 12. Why is there more water for irrigation in this state than in some of the others? 13. Trace the divide between the Pacific and Atlantic drainage as it crosses Colorado. Trace it northward to Canada and southward to Mexico. 14. Name the cities in Colorado mentioned in the text, and tell how each is important. 15. Find the population of Denver (see Appendix). Compare it with that of other large cities in the Western States; also with that of New Orleans and of Buffalo.

New Mexico (N.M.). 16. Locate Santa Fé; Albuquerque. 17. What rivers drain this state? 18. Compare its area with that of Pennsylvania. 19. Its population.

Arizona. (Ariz.). 20. What can you tell about the large river that crosses Arizona? 21. What cities and industries are mentioned? 22. What minerals are obtained here? 23. How does the largest city compare in size with the largest in New Mexico? In Colorado? 24. Find the population.

Nevada (Nev.). 25. For what mines was Nevada famous? 26. Find its present population (see Appendix). Why are there so few people? 27. What about its present industries? 28. How may the government irrigation work be of special value to this state?

Utah. 29. Why is the Great Salt Lake salt? 30. What are the industries of this state? 31. What cities are mentioned? Tell about each. 32. Examine the maps, Figures 249 to 274, to see what products come from Utah.

Idaho (Ida.). 33. What metals are obtained? (See Figs. 391 to 396.) 34. What great river drains Idaho? 35. What mountain range forms the eastern boundary?

Washington (Wash.). 36. Compare the coast line with that of Oregon; of Maine. 37. What about the rainfall of this state? Compare it with that of Montana (Fig. 408). Why this difference? 38. What effect has the rainfall upon the industries? What are the principal industries? 39. What cities are mentioned in the text? What can you tell about each?

Oregon (Ore.). 40. What advantage do you see in the location of the largest city? 41. Compare it in size with Denver; New Orleans. 42. Examine the maps (Figs. 371 to 397) to see what is produced in Oregon. 43. What industries are mentioned in the text? 44. What cities are mentioned, and in what connection?

California (Cal.). 45. What about the rainfall? 46. What two rivers drain most of this state? 47. Describe the relief. 48. Name the cities mentioned; for what is each important? 49. What industries are found in this state? 50. What advantage do you see in the location of San Francisco? 51. Compare its population with that of Boston; Denver. 52. What caused the early growth of California? What effect has that had on other Western States?

General Review Questions

53. Which state has the largest population (see Appendix)? The smallest? 54. Compare each of these two with Massachusetts and New York in population. 55. Name and locate the eight largest cities (see Appendix). 56. Which of the five groups of states has the densest population (Fig. 367)? Which the least dense? What reasons can you give?

Suggestions

1. Read about the expedition of Lewis and Clark from St. Louis to the Pacific coast in 1803–1806. 2. Find out about the early settlement, and dispute about the ownership, of Oregon. 3. What is the origin of the expression "to pan out"? 4. Mention several of the advantages and disadvantages of having no rain for several months at a time, as in southern California. 5. Make a collection of minerals for the school. 6. Should the ditch that is to irrigate a certain field skirt its upper or lower edge? Why? 7. Which is the more easily irrigated, nearly level land, or land that is rough and hilly? Why? 8. Is southern California as liable to cold snaps as Florida? Why? 9. Make a list of articles made of wool. 10. What have been the objections to admitting Arizona and New Mexico into our Union as states? 11. Write a story describing an imaginary visit to southern California. 12. Make a drawing of the Western States, putting in the principal mountain ranges, rivers, and cities.

General Review Questions for United States

1. Name the principal crops of the United States, and tell in which section each is raised. (Consult figures 249 to 259.) 2. Do the same for mineral products. 3. For other raw products. 4. For manufactured articles. 5. Name the ten largest cities in their order (see Appendix). For what is each important? 6. State some ways in which the rainfall influences the occupations of the people. 7. The temperature. 8. State clearly the influence of the absence of forests on the prairies. 9. Of the rich mineral deposits in the West. 10. In what ways have the Great Lakes been of value? 11. Name some of the cities that have been benefited by them. 12. In what ways have the Mississippi River and its two largest tributaries been of value?

13. State some of the natural advantages that have aided the growth of Boston; New York; Buffalo; Philadelphia; Baltimore; New Orleans; Cleveland; Pittsburg; Detroit; Chicago; St. Louis; and San Francisco. 14. Can you name some other cities that have also been influenced by their surroundings? 15. Which is the largest state (see Appendix)? The second in size? The smallest? The next to the smallest? 16. Which state has the largest population (see Appendix)? The second largest? The smallest? Next to the smallest? 17. What states border Mexico? Canada? 18. Draw a map of the United States.

SECTION III. TERRITORIES AND DEPENDENCIES OF THE UNITED STATES

Map study

1. On the map of world (Fig. 107) locate (*a*) Alaska; (*b*) Porto Rico; (*c*) The Philippine Islands; (*d*) The Hawaiian Islands. 2. On the map of North America (Fig. 134) locate Alaska and Porto Rico. 3. Bound Alaska. 4. What large river crosses Alaska? 5. Name the largest islands in the Philippines (Fig. 328).

Our increase of territory

At the close of the Revolutionary War the United States consisted of thirteen small colonies, extending along the Atlantic coast from Maine to Georgia. Our new nation laid claim also to the land far into the wilderness, even to the distant Mississippi. Beyond this was French and Spanish territory, while the whole Mississippi Valley was occupied by Indians.

By purchase, by war, or by treaty, we have gained possession of all the land between the Atlantic and the Pacific, which has thus far been described. Recall what was said about the growth of the United States on pages 106 and 107 (see also Fig. 142).

Our growth has continued so that now our territory does not end with the boundaries of the United States proper. In 1867 we obtained Alaska, and in 1898 we came into possession of a number of islands, some of which are on the other side of the globe. Since these lands form a part of our territory, a study of them may come at this point.

1. Alaska (Fig. 318)

Purchase of Alaska, and why it at first seemed unwise

Alaska (Fig. 318), which was purchased from Russia in 1867 (for $7,200,000), is almost one fifth as large as the United States. Measure to see how far this territory is from our nearest ports, on Puget Sound. Most people thought it very foolish to buy a territory so far away and so far north.

A large part of Alaska is mountainous (Fig. 319), and much of it is in the frigid zone, as you can see. About how much of it? In addition, at that time we already had more land than we knew what to do with. For these reasons, most persons thought that the purchase of Alaska was very unwise. They even called it "Seward's folly," because Secretary Seward, who was in President Lincoln's cabinet, was the one who chiefly urged the purchase.

Reasons why it was a wise purchase

As it has turned out, however, it was a wise purchase, for Alaska has become an important part of the United States, and is developing rapidly.

1. Agriculture and lumbering

Most of Alaska is too mountainous and too cold for agriculture. Yet the summers are warmer than one might suppose, and some parts of the country are level enough for farming.

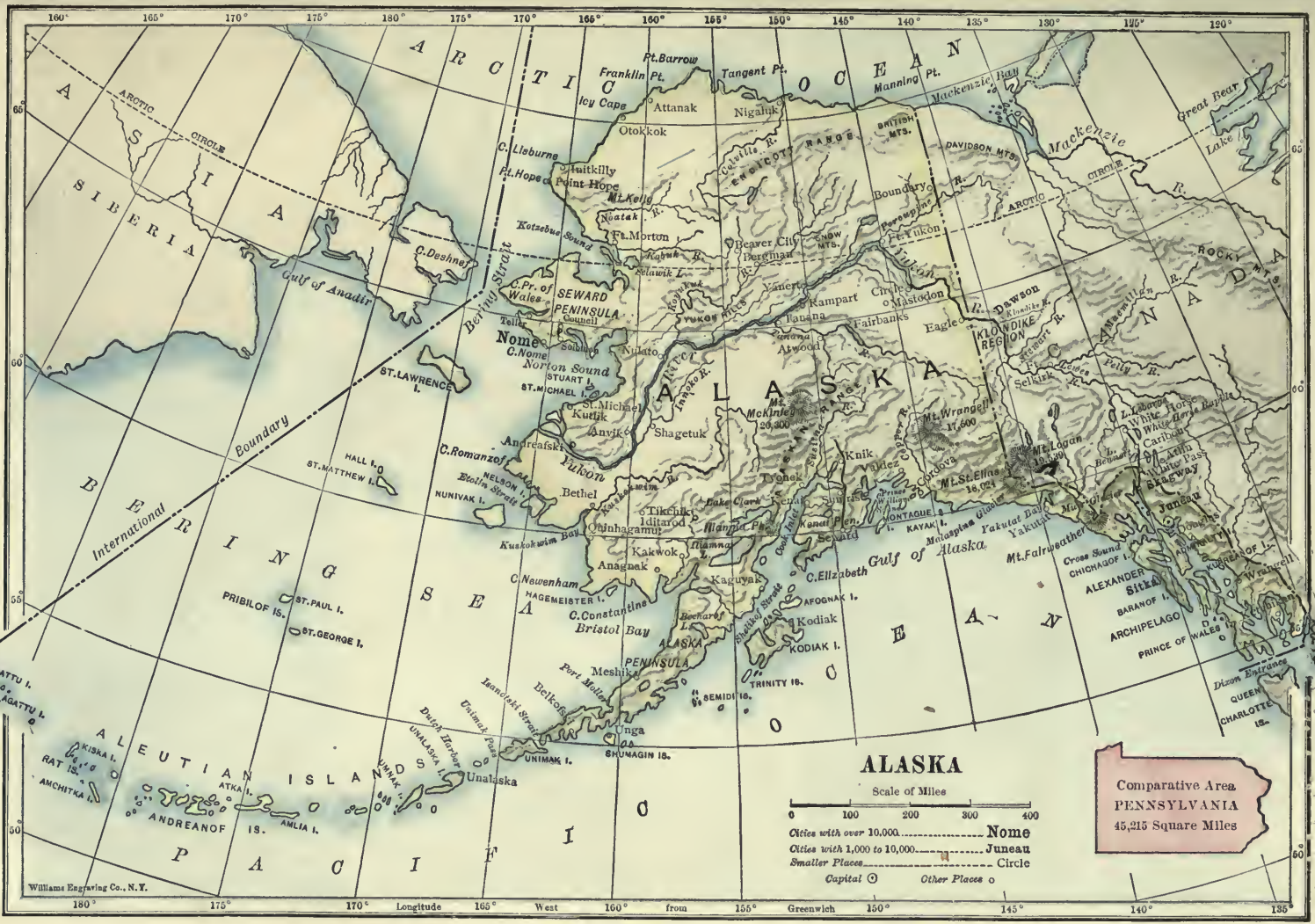

ALASKA
Scale of Miles
0 100 200 300 400
Cities with over 10,000 ..... Nome
Cities with 1,000 to 10,000 ..... Juneau
Smaller Places ..... Circle
Capital ⊙ Other Places o
Comparative Area
PENNSYLVANIA
45,215 Square Miles
ARCTIC OCEAN
BERING SEA
PACIFIC OCEAN
SIBERIA
CANADA
ALASKA
ALEUTIAN ISLANDS
Nome
Bering Strait
Kotzebue Sound
Norton Sound
Yukon
Kuskokwim Bay
Bristol Bay
ALASKA PENINSULA
Kodiak
Gulf of Alaska
Juneau
Sitka
Mt. McKinley 20,300
Mt. Wrangell 17,600
Mt. St. Elias 18,024
Mt. Logan 19,539
Williams Engraving Co., N.Y.

FIG. 318.

FIG. 319. — The snow-covered mountains of the St. Elias chain, Alaska.

Already some crops are raised there, and, doubtless, portions of Alaska will some day produce the more hardy grains and vegetables. Doubtless, also, grazing will become important, for there are extensive natural pastures on which sheep and cattle can feed. In addition, the forests will some day be of value, for there are large areas covered with timber.

2. Fishing

At present the fishing proves the wisdom of the purchase of Alaska much more than the industries just mentioned.

The catching of seals was the first industry of consequence there. One kind of Alaskan seal, called the *fur seal*, has a very fine fur, which is highly prized for making muffs and cloaks. The skins are especially valued because of their warmth and beauty, and as there is no great number of them, they are very expensive. A sealskin cloak costs several hundred dollars. Already more than seven times as much money has come from sealing as was paid for the entire territory of Alaska.

(1) *Sealing*

During the greater part of the year the fur seals swim about in search of food; but in the spring, during the breeding season, they resort to the Pribilof Islands (Fig. 320). The United States government prohibits all persons from killing the fur seal, except one company, which pays a special tax for the privilege of securing a certain number each year. At the proper season the men select a number of seals and drive them off for slaughter, much as sheep would be driven. There are so few of these

FIG. 320. — A group of fur seals on the shore of the Pribilof Islands.

seals, and they are so easily killed, that if the government did not protect them, all would soon be destroyed.

More recently the salmon have come to be of great value. Here, as in the Columbia River (p. 222), tens of thousands of salmon go up the streams every summer, in order to lay their eggs in fresh water. Indeed, people in that country, when wanting salmon for food, often kick them out of the small streams, instead of catching them in the usual way.

(2) Catching of salmon and other fish

These fish are caught and taken to the canneries, where they are cooked and placed in cans for shipment to all parts of the world. Already the salmon taken from the Alaskan streams have yielded more than ten times as much money as Alaska cost us.

Among other fish, halibut and codfish are common on the shallow banks along the Alaskan coast, and vessels from our Western States now go there to catch them.

It is, however, gold that has attracted most attention to this territory. The famous *Klondike* region, in northwestern Canada, first drew large numbers of men to the country, since the easiest route to the Klondike was across Alaska. Thousands of prospectors rushed there in 1896 and 1897, just as they did to California in 1849.

3. Mining

Valuable deposits of gold have since been found at NOME, near JUNEAU, in the Tanana Valley, and in other parts of Alaska. Alaska now produces two or three times as much gold each year as we paid to Russia for the entire territory.

FIG. 321. — Miners fording the icy waters of an Alaskan river on the way to Klondike. Two of them are harnessed to a wagon containing their supplies.

One great difficulty has been to reach the gold fields and to carry supplies to them. The early miners were exposed to great hardships on their journey to the Klondike region. Now, however, by the help of a short railway across the mountains, one can go into the interior of Alaska much more easily. Another railway is being built across the mountains along the Copper River Valley. In summer many miners go up the Yukon River in boats, but this is impossible in winter when the river is frozen. Trace the course of this river. How does the Yukon River compare in size with the Ohio (see Appendix)?

Besides gold, there are also very extensive deposits of copper and coal; but as yet these minerals have not been

FIG. 322.

mined to any great extent. At present there are almost no roads, and even very few trails; and until better means of transportation are provided there can be little development of these valuable mineral resources.

The scenery

Alaska is justly famous for its grand scenery. The journey along the Alaskan coast is one of the most wonderful steamboat voyages in the world. There are so many islands that, for a thousand miles, the steamers sail between lofty, forest-covered mountain walls, with snow-capped peaks in the background, and upon waters whose surface is as quiet as a lake.

Beyond Juneau the mountains become higher, and many of the peaks are more than three miles high. The loftiest of all is Mt. McKinley, the highest mountain on the continent; but Mt. St. Elias, and Mt. Wrangell, an active volcano, are also very high.

The snows are so heavy that most of the mountains are snow-covered throughout the year (Fig. 319); and hundreds of glaciers descend through the mountain valleys, some even entering the sea and breaking off to form icebergs. The largest glaciers on the continent are found in this region. One of the best known of these, the *Muir Glacier*, is not far north of Sitka.

Principal towns

In such a new country there are, of course, no large cities. The oldest and best known is the quaint town of SITKA, the former capital. JUNEAU, which was made the capital a few years ago, besides being near valuable gold mines, is on the route to the Klondike. It is, therefore, an important center. Not far north is SKAGWAY, where miners leave the steamer to take the *White Pass* Railway to the headwaters of the Yukon.

There are also many mining towns, such as DAWSON, in the Klondike region of Canada, and NOME, on Bering Sea. In 1898, the beach sands at Nome were found to contain gold, and in a single season a good-sized city had grown on the beach. Large numbers of men lived in tents, and others in rough wooden shanties. In 1900 there were more than twelve thousand people here; but three years afterward, there were only about one third as many. In such a mining district a town may grow up in a year and become deserted in a single season. Many of the people spend only the warmer season in Alaska, going up there in the spring, and returning to the states in the autumn.

2 CUBA AND PORTO RICO (FIG. 322)

On his first voyage, Columbus discovered some islands southeast of the United States (Fig. 134). These were later called the West Indies, because, as you remember (p. 87), Columbus thought he had reached India.

How these islands happen to be under our guidance

The Spaniards took possession of these islands, and long held the larger ones as colonies. The people were not content under Spanish rule, and there was much trouble and bloodshed. Yet Spain held Cuba and Porto Rico until 1898. At that time the Cubans were fighting a war for independence, and the United States went to their aid. This quickly brought on a war between our country and Spain, called the Spanish-American War. Spain gave up Cuba and Porto Rico at the end of the war. Our government then took control of Porto Rico, and holds it still; but Cuba was allowed its independence, under our protection. It is not, therefore, a part of our territory, as Porto Rico is.

Spanish is the language spoken on both these islands, and many of the people are Spaniards; but there are also many negroes and many half-breeds.

FIG. 323. — A native hut in Cuba.

Cuba is the largest island in the West Indies, being nearly as large as Pennsylvania, although much longer and narrower. Porto Rico is somewhat smaller than Connecticut. Each of these islands is quite mountainous, but there are broad valleys and small, fertile lowlands.

Area and surface features

Both islands lie entirely within the tropical zone, and on the lowlands neither snow nor frost are known. On account of the warm climate many people from the United States go to Porto Rico and Cuba to spend the winter. There is an abundance of rain in most parts of the islands; but the rainfall is especially heavy on the northeastern, or *windward*, slopes, for it is from this direction that the damp ocean winds chiefly come.

Climate

Large portions of Porto Rico and of Cuba have been cleared and cultivated. This is especially true of Porto Rico, which is really an island of farms. Indeed, agriculture is the chief industry on both islands.

Agriculture

As in all the West Indies, the principal crop is sugar cane (Fig. 324), and this industry is carried on much as it is in Louisiana (p. 153). A second important crop is tobacco, for which Cuba is especially noted; and great numbers of cigars are manufactured in these islands.

1. The farm products

Upon the hill slopes, much coffee is produced, and some tea and cocoa. Spices, including nutmeg, cinnamon, and ginger, are products of the West Indies; also pepper, cardamom, vanilla, and pimento or allspice. Bananas, oranges, limes, pineapples (Fig. 325), and cocoanuts are grown in great quantities, and also many vegetables. There is much pasture, too, and many cattle are raised.

FIG. 324. — A train on a sugar plantation in Porto Rico drawing the sugar cane to the sugar mill.

Our soil and climate enable us to raise almost all the farm products that we need. But some that we cannot raise extensively are produced on these islands.

2. Their special value to the United States

Some of these are tea, coffee, sugar, spices, and tropical fruits. The islands also send us fruits and vegetables in midwinter. Thus it is of great value to us that we have such close relations with Cuba and Porto Rico.

FIG. 325. — Pineapples growing in Porto Rico.

In Cuba there is also much valuable timber, including mahogany, ebony, and fustic, which produces a yellow dye. There are also some valuable minerals in Cuba, especially copper and iron.

Other raw products

The largest city of the West Indies is HAVANA, in Cuba, for a long time the center of Spanish rule in America. Another Cuban city is SANTIAGO, where the Spanish ships were sunk in the war of 1898; and a third is MATANZAS.

Principal cities

FIG. 326. — A view along the Canal route, in 1909. When this great cut in the earth is deep enough, it will be flooded with water and large ocean ships will then sail through it.

The two principal cities of Porto Rico are PONCE, on the southern coast, and SAN JUAN, on the northern. The latter is the largest city and the capital of the island.

3. PANAMA CANAL ZONE (Fig. 354)

One of the most interesting regions controlled by the United States is a strip of land, ten miles wide, across the Isthmus of Panama, which connects North America with South America (Fig. 134). The city of PANAMA is at the southern end, and COLON at the northern. It is here that our government is now digging the Panama Canal (Fig. 326), so that even the largest ocean ships may pass from one ocean to the other.

Its location and cost

The distance across the isthmus, along the line of the canal, is less than fifty miles, and the elevation but three hundred feet at the highest point; but it will cost our government several hundred million dollars to complete the work.

This is one of the greatest public works our government has ever undertaken, and it will prove of great service to the entire world. A steamer bound from London to San Francisco will save five thousand miles by taking this new route, while eight thousand miles will be saved in going by boat from New York to San Francisco. The canal will be of benefit to all our seacoast towns, and will also aid in the distribution of the products of the interior.

Advantage of the canal

4. THE HAWAIIAN ISLANDS (Fig. 328)

Far out in the Pacific, between the United States and the Philippines (Fig. 107), lies a group of small islands called the Hawaiian Islands. Formerly they were a little independent kingdom, but in 1893 the people, who are Malayans, rebelled and formed a republic. Later they asked to be made a part

How they came into our possession

FIG. 327. — The "Lake of Fire" in the crater of one of the Hawaiian volcanoes. This is red hot lava, or melted rock, that rises from within the earth.

FIG. 328.

United States' Dependencies in the Pacific.

FIG. 329. — Natives cutting sugar cane on a plantation in the Hawaiian Islands.

of the United States, and in 1898 this was done.

These islands are small, and are scattered over a distance of more than a thousand miles. They are made of lava, which has risen from within the earth, and on Hawaii (Fig. 328), the largest island, there are two volcanoes that are still active (Fig. 327). Every few years one of these bursts forth in eruption, and then vast quantities of melted rock, or *lava*, pour down the slopes toward the sea.

Why they are of special value to us

Such islands, so far away, might seem to be of little value. Yet we have many vessels that make the long voyage from our Western seaports to China, Japan, Australia, and the Philippines. They now and then suffer serious accidents on the way, and they also are in danger of getting out of coal and other supplies. These islands lie on the route that some of these vessels take, about a third of the way between the United States and Asia. For these reasons the Hawaiian Islands are of great importance to us; they serve as a stopping place, where repairs can be made, and where coal and supplies can be obtained.

In what zone do these islands lie? What then is their climate? Many years ago white men introduced here the crops of the Old World, and the larger islands have become quite productive. The principal crop is sugar cane (Fig. 329); but

Chief products and cities

FIG. 330. — The grass hut of a native in the Hawaiian Islands.

Fig. 331. — Five native Hawaiian girls.

coffee, tropical fruits, and rice are also raised.

The two leading cities are Honolulu, on the island of Oahu, and Hilo, on Hawaii.

5. Other Small Island Possessions

Samoa

Tutuila, one of the Samoan Islands, together with the Manua Group, is owned by the United States. It is of little value to us except for the coaling station at the harbor of *Pago Pago.* Apia, the chief city in the Samoan Islands, is on the island of Upola, which belongs to Germany.

Guam

As one of the results of the war with Spain, we obtained the island of *Guam* (Figs. 107 and 328), one of the Ladrones, or Robbers' Islands, some distance east of the Philippines. Like Tutuila, Guam is of little service to us except as a coaling station for vessels.

Other islands

Our country has obtained possession of several other small islands in the Pacific. These are *Marcus Island,* northeast of Guam; *Wake Island,* between Guam and the Hawaiian Islands; *Midway Islands,* northeast of the Hawaiian Islands; and two small islands, *Baker* and *Howland,* nearly on the equator south of the Midway Islands. None of these is of special importance.

6. The Philippine Islands (Fig. 328)

How these islands came into our possession

The Philippine Islands (Fig. 107) were obtained also as a result of the Spanish-American War. At first they were governed entirely by the United States, but now they have their own legislature, and partly govern themselves.

Find these islands on Figure 107; also on a globe. Name and locate the larger islands (Fig. 328). How would you reach them from San Francisco? From New York? Through what waters would you pass?

Fig. 332. — A native Philippine girl.

There are more than three thousand islands in the group, or archipelago, some of them being very small. The largest two are *Luzon*, which is nearly as large as Pennsylvania, and *Mindanao*, which is a little smaller than Luzon. How far apart are they? The area of all the islands together is about three times that of Pennsylvania. Luzon has more than half as many people as Pennsylvania, and all the islands together have about eight million inhabitants.

Area and population

There is a great mixture of people in the Philippine Islands. Some are Spanish, some, Americans, and many are Japanese and Chinese; but most of the inhabitants are natives (Fig. 332).

Kinds of people

There are several races among the natives, many of whom are partly or wholly civilized. Of these the *Tagalogs* are most advanced, having learned the arts of civilization from the Spaniards. A number of small islands in the southwestern part of the main group are occupied by Mohammedans, called *Moros*. Among the mountainous parts of the other islands, real savages live in the dense forests of the interior. Some of these savages, called *Negritos*, or *little negroes*, are a race of very small, black people.

The United States has the difficult task of governing and teaching these people until they become able to govern themselves. While different languages are spoken by the natives, Spanish is the most common one, as in Cuba and Porto Rico. The use of the English language, however, is rapidly increasing.

The Philippine Islands are the tops of a mountain range rising out of the sea. Much of the surface is therefore mountainous, some of the peaks being volcanoes. There are, however, many fertile valleys and narrow plains. The climate is everywhere tropical, and in most parts there is a heavy rainfall.

Surface and climate

In many parts it is so damp that cellars under the houses would be too damp to be healthful.

Fig. 333. — A house in the Philippines, built of bamboo and covered with thatch. The house is raised above the ground because of the dampness.

For this reason, the native house is usually raised above the ground, and the family lives in the second story (Fig. 333). The lower part is often used for storage, as a cellar is in our country.

Forests cover a large part of the archipelago, in many places forming tropical jungles. Among the valuable woods are ebony, the rubber tree, and a palm from whose sap alcohol may be made. Cinnamon, cloves, and pepper grow in these islands, and cocoanut and banana trees are also very common.

Vegetation and animal life

FIG. 334. — Native women of the Philippine Islands making cigars in Manila.

As in other tropical forests, there are immense numbers of animals, especially insects, serpents, and beautiful birds. Among the serpents are the huge python and the deadly *cobra de capello*. There are also deer, apes, wild hogs, wild buffaloes, huge bats, and man-eating crocodiles.

Principal products

Among the more important products are hemp, cocoa, coffee, sugar, and tobacco, the latter being manufactured into cigars at MANILA (Fig. 334). *Hemp* is the best-known export of these islands. It is made from the fiber of the wild plantain, which resembles the banana tree. Hemp is used for a number of purposes, one being for making rope. These islands supply the world with hemp for making the better grade, called Manila rope.

Great rafts of cocoanuts are shipped down the rivers to the sea. From this nut an oil is made that is used in lamps, and sometimes in the manufacture of a substitute for lard. Much of the dried meat of the nut, called *copra*, is shipped to Europe for use in soap making.

The natives have domesticated a native wild animal, the water buffalo (Fig. 335), which is of great value as a draft animal. It is of special service in the rice fields, which are kept flooded during the growing season. The buffalo is quite at home in the mud, even preferring wet walking to dry; and, in fact, it must have a daily plunge in the mud and water.

Cities

In this large group of islands, there are many cities having each a population of more than ten thousand; but there is only one of special importance. This is MANILA, on the island of Luzon. This city, which has more than two hundred thousand inhabitants, is situated upon an excellent harbor, and is the capital of the Philippines.

Review Questions and Suggestions

ALASKA: *Questions.* 1. How was Alaska obtained, and how was the purchase at first regarded? 2. What can you say about agriculture and lumbering? 3. State some

FIG. 335. — Native Filipinos plowing with the buffalo.


DOMINION OF
CANADA
AND NEWFOUNDLAND
Scale of Miles
0 100 200 300 400 500 600 700
Cities with over 200,000 ..... Montreal
Cities with 60,000 to 200,000 ..... Winnipeg
Cities with 25,000 to 60,000 ..... Hamilton
Smaller places ..... Nanaimo
Capitals with less than 25,000 ..... VICTORIA
Capitals of Countries ⊛ Capitals of Provinces ⊙ Other Cities ○
Comparative Area
PENNSYLVANIA
45,215 Square Miles
Williams Engraving Co., N.Y.
Longitude West from Greenwich
BEAUFORT SEA
GREENLAND
To Denmark
The Interior is entirely covered with Ice, possibly 2,000 Ft. to 3,000 Ft. thick
BAFFIN LAND
HUDSON BAY
LABRADOR PEN.
NEWFOUNDLAND
NOVA SCOTIA
NEW BRUNSWICK
PRINCE EDWARD I.
CAPE BRETON I.
ANTICOSTI I.
Gulf of St. Lawrence
ATLANTIC OCEAN
PACIFIC OCEAN
Mt. St. Elias 18,024
Mt. Hooker 10,000
Mt. McKinley
Mt. Logan
Mt. Wrangell
Malaspina Glacier
Muir Glacier
Yukon R.
Mackenzie R.
Peace R.
Athabasca R.
Great Slave Lake
Great Bear Lake
Lake Winnipeg
Lake Manitoba
Lake Superior
Lake Michigan
Lake Erie
Lake Ontario
Hudson Strait
Davis Strait
Baffin Bay
Melville Sound
Barrow Strait
Lancaster Sound
Prince of Wales Strait
Dease Strait
Coronation Gulf
Dolphin and Union Strait
Queen Charlotte Islands
Vancouver I.
Juan de Fuca Strait
Puget Sound
Strait of Georgia
Alaska
Yukon Territory
Mackenzie District
Keewatin
Saskatchewan
Alberta
British Columbia
Manitoba
Ontario
Quebec
Ungava
Labrador
Vancouver
Victoria
Seattle
Portland
Tacoma
Spokane
Edmonton
Calgary
Regina
Winnipeg
Brandon
Prince Albert
Battleford
Medicine Hat
Rat Portage
Port Arthur
Fort William
Sault Ste. Marie
Duluth
Minneapolis
St. Paul
Milwaukee
Chicago
Detroit
Windsor
Toronto
Hamilton
London
Buffalo
Niagara Falls
Ottawa
Montreal
Quebec
Kingston
Peterboro
Brantford
Guelph
Portland
Boston
New York
Philadelphia
Halifax
Sydney
St. John's
Yarmouth
Fredericton
Moncton
Chatham
Sherbrooke
Hull
Cobalt
Saguenay R.
St. John R.
St. Lawrence R.
Ottawa R.
Missouri R.
Albany R.
Nelson R.
Churchill R.
Saskatchewan R.
Red R.
Assiniboine R.
Winnipegosis L.
Manitoba L.
Nipigon L.
Mistassini L.
Great Slave L.
Great Bear L.
Athabasca L.
Dubawnt L.
Baffin Land
Melville Peninsula
Southampton I.
Coats I.
Mansfield I.
Prince Albert Land
Victoria Land
Wollaston Land
Banks Land
Melville I.
Bathurst I.
Cockburn Land
North Devon
North Somerset
Boothia Pen.
Magnetic Pole
Arctic Circle
Prince of Wales I.
Queen Charlotte Sound
Hudson Bay
James Bay
Ungava Bay
Hudson Strait
Davis Strait
Baffin Bay
Labrador Pen.
Gulf of St. Lawrence
Strait of Belle Isle
Strait of Canso
Cape Race
Cape Sable
Cape Farewell
Cape Dan
Cape Chidley
Cape Wolstenholme
Cape Henrietta Maria
Cape Eskimo
Cape Dufferin
Cape Bald
Cape Sable
Fort Churchill
York Factory
Fort Chipewyan
Fort Simpson
Fort Wrangell
Sitka
Ste. Anne
Lake Athabasca
Lake Mistassini
Lake Nipigon
Lake Winnipegosis
Lake Manitoba
Lake Superior
Lake Michigan
Lake Erie
Lake Ontario
Hudson Strait
Davis Strait
Baffin Bay
Melville Sound
Barrow Strait
Lancaster Sound
Prince of Wales Strait
Dease Strait
Coronation Gulf
Dolphin and Union Strait
Queen Charlotte Islands
Vancouver I.
Juan de Fuca Strait
Puget Sound
Strait of Georgia
Alaska
Yukon Territory
Mackenzie District
Keewatin
Saskatchewan
Alberta
British Columbia
Manitoba
Ontario
Quebec
Ungava
Labrador
Vancouver
Victoria
Seattle
Portland
Tacoma
Spokane
Edmonton
Calgary
Regina
Winnipeg
Brandon
Prince Albert
Battleford
Medicine Hat
Rat Portage
Port Arthur
Fort William
Sault Ste. Marie
Duluth
Minneapolis
St. Paul
Milwaukee
Chicago
Detroit
Windsor
Toronto
Hamilton
London
Buffalo
Niagara Falls
Ottawa
Montreal
Quebec
Kingston
Peterboro
Brantford
Guelph
Portland
Boston
New York
Philadelphia
Halifax
Sydney
St. John's
Yarmouth
Fredericton
Moncton
Chatham
Sherbrooke
Hull
Cobalt
Saguenay R.
St. John R.
St. Lawrence R.
Ottawa R.
Missouri R.
Albany R.
Nelson R.
Churchill R.
Saskatchewan R.
Red R.
Assiniboine R.
Winnipegosis L.
Manitoba L.
Nipigon L.
Mistassini L.
Great Slave L.
Great Bear L.
Athabasca L.
Dubawnt L.
Baffin Land
Melville Peninsula
Southampton I.
Coats I.
Mansfield I.
Prince Albert Land
Victoria Land
Wollaston Land
Banks Land
Melville I.
Bathurst I.
Cockburn Land
North Devon
North Somerset
Boothia Pen.
Magnetic Pole
Arctic Circle
Prince of Wales I.
Queen Charlotte Sound
Hudson Bay
James Bay
Ungava Bay
Hudson Strait
Davis Strait
Baffin Bay
Labrador Pen.
Gulf of St. Lawrence
Strait of Belle Isle
Strait of Canso
Cape Race
Cape Sable
Cape Farewell
Cape Dan
Cape Chidley
Cape Wolstenholme
Cape Henrietta Maria
Cape Eskimo
Cape Dufferin
Cape Bald
Cape Sable
Fort Churchill
York Factory
Fort Chipewyan
Fort Simpson
Fort Wrangell
Sitka
Ste. Anne
Lake Athabasca
Lake Mistassini
Lake Nipigon
Lake Winnipegosis
Lake Manitoba
Lake Superior
Lake Michigan
Lake Erie
Lake Ontario

FIG. 336.

facts about sealing. 4. What other kinds of fish are caught? 5. State the principal facts about mining. 6. Describe the scenery. 7. Name and locate the leading towns.

Suggestions. 8. Learn more about the fur seal. 9. How does the area of Alaska compare with that of the United States proper? 10. Measure the length of the Yukon, and compare it with the Mackenzie. 11. Draw an outline map of Alaska.

PORTO RICO and CUBA: *Questions.* 12. How do these islands happen to be under our guidance? 13. What are their areas and principal surface features? 14. Describe the climate. 15. Name the farm products. 16. How are these products of special value to the United States? 17. What other raw products are found? 18. Name and locate the principal cities.

Suggestions. 19. Estimate the length and average breadth of Cuba. 20. What products of Cuba and Porto Rico are also raised in the United States? Where? 21. Make a sketch map of Cuba and Porto Rico.

PANAMA CANAL ZONE: *Questions.* 22. Locate this zone. 23. What can you tell about it? 24. What advantages will be secured by the canal?

Suggestions 25. What difficulties are caused by the climate in the work of digging the canal? 26. Read magazine articles telling about the work.

THE HAWAIIAN ISLANDS AND OTHER SMALL ISLANDS: *Questions.* 27. Where are the Hawaiian Islands located? 28. How did they come into our possession? 29. What can you tell about the volcanoes? 30. Why are these islands of special value to us? 31. What are the chief products? 32. Name and locate the two chief cities. 33. Name and locate other island possessions. 34. How are they important?

Suggestions. 35. Why should you expect much the same products in the Hawaiian Islands as in Cuba? 36. Explain the presence of many Chinese and Japanese in these islands.

THE PHILIPPINE ISLANDS: *Questions.* 37. How were these islands obtained? 38. What about their area and population? 39. State some facts about the people. 40. Describe the surface and climate. 41. What about vegetation and animal life? 42. What are the principal products? 43. What about the cities?

Suggestions. 44. Compare the latitude of the islands with that of the West Indies and of the Hawaiian Islands. 45. Name several other places thus far studied that have volcanoes. 46. Collect pictures of scenes in the Philippines. 47. Find out about Dewey's capture of Manila. 48. Make a sketch map of the islands.

General Review Questions

1. Name the principal dependencies of the United States. 2. Locate each on the map of the world (Fig. 107). 3. Walk toward each. 4. Name the principal products of each. 5. In what zones does each lie? 6. How did we obtain each? 7. Name and locate the principal cities in our dependencies. 8. Which of our dependencies seem to you most valuable? Why?

IV. COUNTRIES NORTH OF THE UNITED STATES

1. CANADA AND NEWFOUNDLAND

Map study

1. What parts of the boundary line between the United States and Canada are natural (Fig. 134)? 2. In what zones does Canada lie? What can you say about its climate? 3. What can you tell from the map about its rivers and lakes? About its mountains? 4. Into what large river do the Great Lakes empty? 5. What Falls are in the river between Lake Erie and Lake Ontario (Fig. 144)? 6. How must these Falls hinder shipping? 7. Which one of the Great Lakes lies wholly within the United States? 8. Which of our states border on Canada? 9. How near are Detroit and Buffalo to Canada? 10. Locate the Gulf of St. Lawrence; Hudson Bay; Greenland; Labrador; Newfoundland; Nova Scotia.

Canada is larger than the United States, even including Alaska; yet its

Area, population, and government

population is only about six millions, or about the same as that of our single state of Pennsylvania.

Canada includes nine provinces that correspond, in a way, to our states. These are Nova Scotia, New Brunswick, Prince Edward Island, Quebec, Ontario, Manitoba, Saskatchewan, Alberta, and British Columbia. Locate each of these. There are, besides, three territories. What are their names? Together they form a Union, called the *Dominion of Canada*, which is much like our own Union. The capital is OTTAWA, corresponding to our capital, Washington. Although Canada is a *colony* of Great Britain, the people make their own laws, and are quite as independent as we are.

NEWFOUNDLAND has refused to join the Dominion, so that, while still a colony of Great Britain, it is not a part of Canada. Newfoundland includes not only the island by that name, but also the east coast of Labrador.

FIG. 337. — Lake Louise, nestled among the snow-capped mountains of western Canada, along the line of the Canadian Pacific Railway.

Why settled chiefly in the southern part

A large part of Canada is really waste land. The northern portion, including many islands in the Arctic zone, has hardly any inhabitants except a few Eskimos. Farther south there is a broad belt of forest (Fig. 343). This also has few inhabitants, and these are mainly hunters and Indians. The climate here is severe, and much of the soil is too rocky and sterile for agriculture.

Surface features of southern Canada

The surface of southern Canada very closely resembles that of our Northern States. Eastern Canada, for instance, is much like New England. The section that lies north of Ohio and New York is more nearly level, like those states; and it is the most important farming region in the Dominion. Farther west, north of Dakota and Montana, are broad plains (Fig. 338), increasing in elevation to the very base of the Rocky Mountains.

Among the Western mountains are many canyons, glaciers, and snow-capped peaks (Fig. 337). The scenery of this region is wonderful, and the Canadian Pacific Railway passes through the best of it. A portion of this wonderland has been set aside as a national park by the Canadian government.

The climate of southern Canada, like the surface features, corresponds to that of our Northern States, though it is slightly cooler. The climate of Nova

Scotia, New Brunswick, and southern Quebec, for example, resembles that of New England, while Ontario has a climate similar to that of New York, Ohio, and Michigan. Farther west, in Manitoba, we find nearly the same climate as in Minnesota and North Dakota; and west of this, in Saskatchewan and Alberta, come the arid lands. In British Columbia, on the west coast, there is heavy rainfall and an even temperature, as in Washington.

Climate of Southern Canada

The Labrador current, which so cools the temperature of New England (p. 115), sweeps from the Arctic Ocean past Labrador and greatly chills the coast of that region, as well as Newfoundland and Nova Scotia. There is no such ice-laden current in the Pacific, and for that reason the climate is far warmer there. Notice, for instance, how much farther north Vancouver and Juneau are than any city in eastern Canada.

The facts that were given about farming and grazing in our Northern States are almost equally true of the country that lies north of them in Canada. For example, the warm, damp ocean winds favor the production of wheat and the hardy fruits in British Columbia as well as in Washington (p. 206).

Agriculture

1. Wheat and hardy fruits in the West

Farther east, on the plains at the base of the Rocky Mountains, the climate is too arid for farming. Here, therefore, ranching is the principal industry, as in Montana and western Dakota (pp. 182 and 214). Immense herds of sheep and cattle are reared on these plains. There are several towns here, the largest of which is CALGARY.

2. Ranching in the arid lands

FIG. 338. — Fields of wheat, some cut, some uncut, on the level, fertile plains of southern Manitoba.

In central Saskatchewan the climate begins to be more favorable for agriculture, and there, as well as in Manitoba, enormous quantities of wheat are raised. This wheat belt is a continuation of that found in Minnesota and eastern Dakota. Although the winters are long and cold, the summers are warm, so that the hardy grains, especially wheat (Fig. 338), oats, and barley, thrive.

3. The greatest grain region, and its leading city

In the midst of this wheat region is WINNIPEG, situated on the banks of the Red River of the North, which empties into Lake Winnipeg. Find out, from the map (Fig. 336), what other large river is tributary to this lake; also the name of the outlet of the lake.

The country north of Lake Superior is hilly and for the most part forest-covered, being quite like northern Minnesota and Michigan. There is, therefore, little agriculture here.

Farther east, on the peninsula between Lakes Erie and Ontario on the east, and Lakes St. Clair and Huron on the west, is some of the best farm land in Canada. This region is in the province of Ontario, which is the most densely settled of the Canadian provinces, containing nearly half of all the people in Canada. What large cities do you find here? More than two thirds of the inhabitants of Ontario, however, dwell either on farms or in small towns in the farming districts.

4. The most populous farming section, and its products

This section is no farther north than central and western New York, and its climate is greatly influenced by the Great Lakes. Here grapes, peaches, corn, and even tobacco are raised; also quantities of oats, wheat, barley, and flax. Some of the finest horses in America are reared in Ontario, and the province is further noted as a dairy region.

There is a strip of excellent farming country along the St. Lawrence River and the southern shores of the Gulf of St. Lawrence. Show these sections (Fig. 336). Prince Edward Island has many fine farms, and portions of Nova Scotia and New Brunswick also are farming districts. One of the best and most beautiful farming regions in all Canada, noted especially for delicious apples, is in southwestern Nova Scotia. Here the French settlements were made, about which Longfellow has written in his "Evangeline"; and this region is often called "The Land of Evangeline."

5. Farming in southeastern Canada

FIG. 339. — Farmers at work in the fertile wheat fields of western Canada, near Winnipeg.

Western Canada, like western United States, is a noted mining region. Among the minerals, gold and silver are especially important, though lead and copper ores, building stone, coal, and other mineral products are also obtained. Valuable deposits of coal are found both among the mountains and

Mining

1. In British Columbia and Yukon Territory

in the plains farther east. You have already learned that the famous Klondike region is situated in Yukon Territory, near the Alaskan boundary. Although so near the Arctic Circle, DAWSON CITY, in the Klondike, has grown rapidly because of the gold mining.

Gold and silver are found in the province of Ontario, in the vicinity of the Lake of the Woods. One of the most remarkable silver deposits on the continent has recently been discovered at Cobalt, north of Lake Ontario. Nickel is also mined in Ontario, and some oil fields have been developed.

2. In Ontario and southeastern Canada

Although iron ore has been discovered in certain places, the scarcity of coal, near at hand, has prevented Canada from producing much iron. The coal of western Canada is too distant for use in the Eastern cities, and the coal beds of the East have never been thoroughly developed.

In Nova Scotia, and on Cape Breton Island, which is a part of Nova Scotia, there are extensive beds of soft coal, like that of western Pennsylvania and the Central States. This coal is shipped to the cities of the St. Lawrence Valley. An important iron-manufacturing industry has developed at SYDNEY, Cape Breton Island. This has increased the value of the Nova Scotia coal.

The forests that cover northern New England extend into the hilly and mountainous section of New Brunswick and southern Quebec (Fig. 343). In fact, from there westward to the Pacific this wooded tract, sweeping northward around the vast plains of Manitoba, is from two to three hundred miles wide. This forest, which is one of the largest in the world, includes fully a million square miles, or more than a fourth of the entire area of Canada.

FIG. 340. — One of the large trees in the forest of western Canada. The boy sitting on the trunk gives a scale by which you can judge the size of the tree.

Lumbering

1. Extent of the forests

In the east, the principal trees are spruce, balsam fir, pine, and maple; in the west they are spruce, mammoth cedar, sometimes sixty feet in circumference, and Douglas fir, which in some cases grow to a height of two hundred feet (Fig. 340). Most of this vast forest is a wilderness, about which very little is known. Wild animals (Fig. 341) still live here in great numbers, and there are few parts of the continent where the hunting for large game is so

FIG. 341. — Some of the animals of northeastern United States and southeastern Canada.

good. Among the animals are the deer, moose, bear, fox, wolf, wild cat, beaver, and mink. Furs are one of the principal products of the region. From very early days the Hudson Bay Company has had trading stations in this wilderness for the purpose of obtaining the furs from Indians and other hunters and trappers.

2. Method of lumbering, and lumber centers

Lumbering is carried on in much the same manner as in the northern part of the United States (pp. 118 and 220). In the east the principal river down which the logs are floated to the sea is the St. John. Upon this river are FREDERICTON, the capital of New Brunswick, and ST. JOHN, the largest city in that province. In these two cities the logs are made

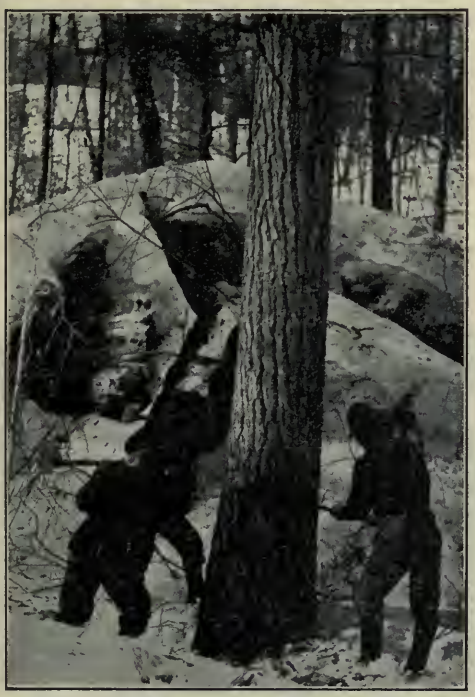


FIG. 343. — Lumbermen chopping down a tree in the forest of eastern Canada. Note how much smaller this tree is than that in Fig. 340.

into either wood pulp or lumber. Immense quantities of both these products are shipped from the seaport of ST. JOHN.

The woods of Canada are at present one of its greatest sources of wealth; indeed, there are hundreds of sawmills

FIG. 342. — A moose in the woods of Canada.

at the rapids on the streams, and even in the large cities. Among the latter, OTTAWA, TORONTO, and MONTREAL are important, especially in the manufacture of lumber into such articles as doors, sash, blinds, barrels, and furniture.

Fishing

1. Catching of food fish

It was the excellent fishing on the shallow banks off the eastern coast of Canada that early attracted the French to America, and fishing is still a flourishing industry along that coast. The French still own two small islands there, St. Pierre and Miquelon, to which their fishing vessels go.

Fully fifty thousand people in Newfoundland and the eastern provinces, especially Nova Scotia and Prince Edward Island, are engaged in cod fishing. One of the best-known fishing ports is YARMOUTH, in Nova Scotia, although a

great deal of fishing is carried on from Halifax, and smaller places in Nova Scotia. St. John's, Newfoundland, is another important fishing port.

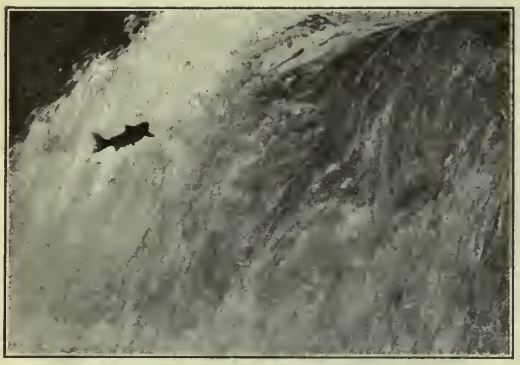


Fig. 344. — Photograph of a salmon leaping up over a waterfall in a stream on the coast of Labrador. This fall is over ten feet high and yet the salmon are able to leap up over it.

There is also much inland fishing, for the streams and lakes still abound in trout, pickerel, whitefish, bass, and salmon (Fig. 344). Every year large numbers of men go from Canada and the United States to enjoy the sport of fishing in the Canadian lakes and streams. In addition there is much fishing on the west coast, especially for salmon.

It is interesting to watch the salmon as they run up the streams to spawn. At times, in order to get beyond waterfalls, they must leap several feet into the air (Fig. 344). Often they fail, but, returning to the task, they try again and again until successful. When the young have reached the proper size, they go downstream to the ocean, where they live until they are ready to spawn. It is believed that they always go back to the river in which they were born.

While traveling up the streams, the salmon are easily caught in nets set across the current, or by dip nets in the hands of fishermen, or sometimes by salmon wheels. Immense numbers of salmon are canned in western Canada (Fig. 345), as in Washington and Alaska.

We have already learned (p. 239) about the seal fishing in Alaska. Seals are also found on the eastern shores of Canada, but their fur is of little value. **2. Sealing** There is, however, a layer of fat, or blubber, just beneath the skin, as in the whale. This can be made into oil, and it is mainly for the blubber that these Eastern seals are caught, though the skins are used also for making leather. Vessels go out from St. John's, Newfoundland, every spring to hunt the seals in the ice that floats down in the Labrador current (Fig. 346). Vessels go from this port also to catch the huge whales that live in the Arctic waters.

There appear to be two outlets by water for central Canada, — one by way of the St. Lawrence, the other by way of Hudson Bay. The latter is of little use, however. Perhaps you can explain why. **Transportation**

Canada shares with the United States the advantages of navigation on all the Great Lakes, with one exception. Which is it? Fortunately for Canada, the lower St. Lawrence lies wholly within that country. But this river has some serious drawbacks. One is the ice that stops navigation in winter. A second is the

Fig. 345. — Salmon in a salmon cannery, just brought from the water.

presence of numerous rapids over which vessels cannot pass in going upstream (Fig. 348). In addition, dense fogs are common in the Gulf of St. Lawrence and along the Newfoundland coast, where the air from the ocean is chilled in passing over the cold Labrador current. Ship canals have been built around the rapids and falls (Fig. 347), so that good-sized boats are able to go from the open ocean to the western part of Lake Superior, a distance of twenty-two hundred miles. This gives the Canadian route a great advantage over the Erie Canal route, upon which only small canal boats can go. The new barge canal, now under construction, is expected greatly to increase the value of the Erie Canal route.

FIG. 346. — Seal hunters killing seal on the floe ice in the Labrador current north of Newfoundland.

There are several other large rivers in Canada besides the St. Lawrence River. Name some of them, and tell why most of them are of little value.

Railways are of great importance in Canada, as in the United States. The leading railway is the Canadian Pacific, which extends from St. John, New Brunswick, entirely across Canada, to VANCOUVER, on the Pacific coast. It

FIG. 347. — The Welland Canal, between Lakes Erie and Ontario. At this point there are two locks in the canal.

is the shortest route from England to China and Japan, and much freight is sent that way. Another important line is the Grand Trunk Railway.

Leading cities
1. Along the St. Lawrence and Ottawa Rivers

MONTREAL (Fig. 349), the principal city in Canada, is on the St. Lawrence River (Fig. 350), at the mouth of the Ottawa River, and just below the Lachine Rapids (Fig. 348). Thus goods with the interior of Canada, by water and by rail, Montreal has advantages similar to those of New York; but since it has a less fertile territory to draw upon, it has grown far less rapidly than New York City.

As in the large cities of the United States, there are many kinds of manufacturing in Montreal, including the making of sugar, boots and shoes, cotton

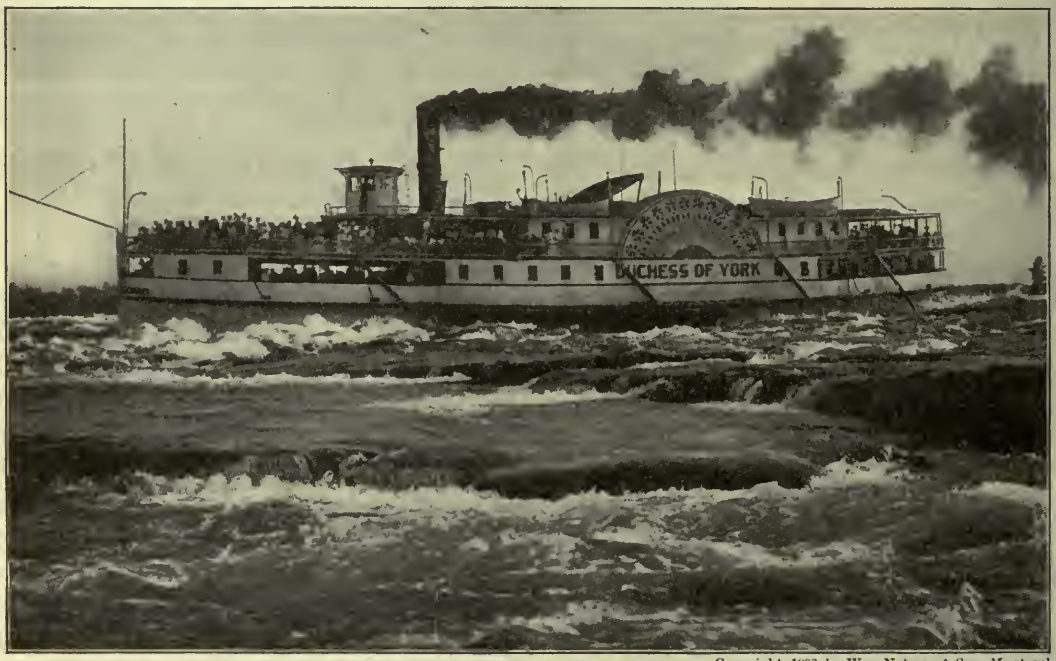


FIG. 348. — A steamer going down the Lachine Rapids just above Montreal. It must take the canal around these rapids in going upstream.

from Europe may be carried by ocean vessel to Montreal, fully a thousand miles inland; thence, by other ships, they may be taken on canals, rivers, and lakes as far as Duluth. By this means, and by railways also, raw products from the North, the East, the South, and the West are brought to Montreal, either to be manufactured, or to be shipped farther. Because of its extensive connections and woolen clothing, India-rubber goods, furniture and other articles of wood, various steel and iron products, and cigars.

Farther down the river is QUEBEC, which was once the center of the French government in Canada, and the principal city. It is situated on a high bluff rising above the St. Lawrence, and is fortified so as to command that river. The

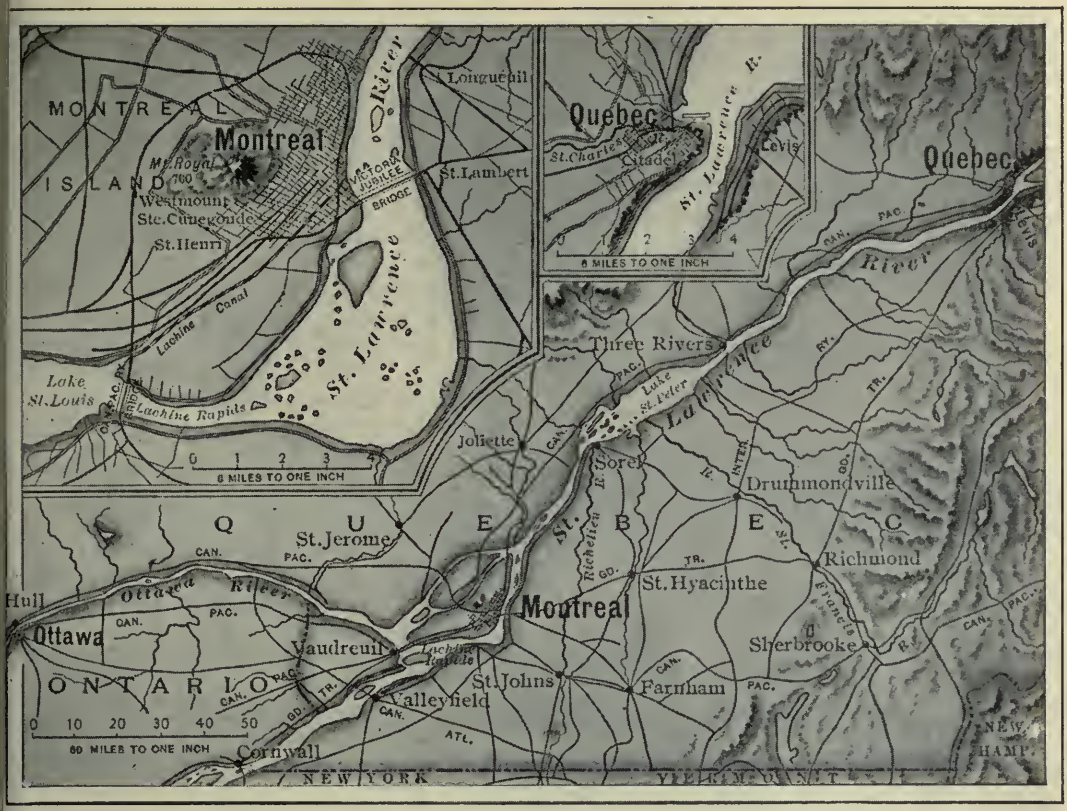


FIG. 349. — Map to show the location of Montreal, Ottawa, and Quebec.

FIG. 350. — A view of Montreal from the hill, called Mount Royal, which rises directly behind the city. In the distance is the broad St. Lawrence. Notice the long bridge crossing it.

better location of Montreal, farther inland, has drawn the commerce away from Quebec. The advantage of Montreal's situation has been greatly increased by the building of ship canals around the rapids of the St. Lawrence; also by the dredging of the river, deepening the channel so as to allow ocean vessels to reach the city.

Quebec is one of the quaintest and most interesting cities on the continent. It resembles a bit of the Old World, transplanted to America, and a visitor from the United States feels that he is indeed in a foreign country. There is some manufacturing there, such as the making of boots and shoes.

OTTAWA (Fig. 349), the capital of the Dominion, is above Montreal, at a large fall in the Ottawa River. Because of the fine water power, the city has much manufacturing; it is especially noted for lumber manufactories. It has beautiful government buildings, known as the *Parliament Buildings* (Fig. 351).

2. Along the Atlantic coast

What Canadian cities on the Atlantic coast have already been mentioned, and in what connections? One of these, HALIFAX, in Nova Scotia, is one of the oldest cities in Canada. Although it has an excellent harbor, Halifax has never become a great city. The reason is easily seen on examining the map (Fig. 336). The narrow peninsula of Nova Scotia is not large enough to supply raw materials and manufactured articles in sufficient quantity to make it a great shipping point, and the country farther west is too difficult to reach. It is much cheaper to send Western goods to Montreal for shipment eastward, than to carry them by rail as far as Halifax.

FIG. 351. — The Parliament Buildings at Ottawa.

3. Along the Great Lakes

TORONTO, the second city in size in Canada, is located on an excellent harbor on the shores of Lake Ontario. Being in the midst of a fertile farming country, and having water connection with coal on the east and south, and with lumber and other raw products on the west, Toronto has become a great manufacturing center. At the same time it is one of the most attractive cities on the continent.

Not far from Toronto, on the extreme western end of Lake Ontario, is HAMILTON, a manufacturing and trade center; there are also other cities on the same peninsula, the largest being LONDON. At the eastern end of Lake Ontario, near the Thousand Islands, is KINGSTON, which has cotton and woolen mills, car shops, and locomotive works, besides being a lake port and a railway center. WINDSOR (Fig. 336), opposite Detroit, shares some of the advantages of that city, being a shipping point and a manufacturing center. PORT ARTHUR, whose location corresponds to that of Duluth in the United States, is a shipping point for grain, cattle, and other Western products.

4. Other cities

What have you already learned about WINNIPEG? VANCOUVER, on the Pacific coast, has already been mentioned. In what connection? Across the strait on the Island of Vancouver is the city of VICTORIA. How do these two cities compare in size with the largest two on Puget Sound? (See Appendix.)

2. GREENLAND (Fig. 336)

The Eskimos (Fig. 352) living on the west coast of Greenland are under the control of the Danes, who trade with them for skins, walrus ivory, blubber, and eider down. The most northern of the Danish trading stations is UPERNIVIK, which is the most northern point in the world where white men live. Some uncivilized Eskimos, however, have homes still farther north.

FIG. 352. — A Greenland Eskimo in his skin-boat, or kayak. In the distance are icebergs which have broken off from the great Greenland glacier.

Most of Greenland is a barren waste of ice and snow — one of the most complete desert lands in the world. There is no living thing to be found in the ice-covered interior.

Review Questions

1. Give some facts about the area of Canada. The population. The government. 2. How many provinces are there in Canada, and what are their names? 3. What can you tell about Newfoundland? 4. Why is Canada settled chiefly in the southern part? 5. Show how fully the surface features of southern Canada correspond to those of our Northern States. 6. Describe the climate. 7. What are the farm products in the West? 8. State the principal facts about ranching. 9. Where is the principal grain region, and what is the leading city there? 10. Where is the most populous farming section, and what are its products? 11. What about farming in southeastern Canada? 12. What can you tell about mining in British Columbia and Yukon Territory? 13. What mineral products are found in Ontario and southeastern Canada? 14. Where are the forests? 15. What is the method of lumbering, and what are the leading lumber centers? 16. Where are food fish caught? What kinds are caught? 17. What about the sealing? 18. What are the conveniences for transportation? 19. Locate and tell the principal facts about the leading cities along the St. Lawrence and Ottawa rivers. 20. Along the Atlantic coast. 21. Along the Great Lakes. 22. Locate and tell about other cities of importance. 23. What facts can you state about Greenland?

Suggestions

1. Compare the area of Canada with that of the United States (see Appendix). 2. Compare the populations (see Appendix). 3. Read the story of "Evangeline." 4. Lake Erie is how much higher than Lake Ontario? How are ships able to pass from one lake to the other? 5. Why should Buffalo grow more rapidly than Toronto? 6. Of what advantage is it to the United Kingdom to have such a large, productive colony as Canada? 7. What books on Arctic travel have you read? Tell some of the

FIG. 353. — Some of the birds and four-footed animals of the Far North.


MEXICO
AND
CENTRAL AMERICA
Scale of Miles
0 100 200 300 400 500
Cities with over 200,000 ---- Mexico
Cities with 100,000 to 200,000 ---- Guadalajara
Cities with 50,000 to 100,000 ---- Leon
Smaller Places ---- Miraflores
Capitals ⊙ Other Cities ○
PANAMA CANAL
AND
United States Canal Strip
Scale of Miles
0 5 10
Comparative Area
PENN.
45,215 Square Miles
Longitude West from Greenwich
Williams Engraving Co., N.Y.

FIG. 354.

things you have learned from them. 8. Read Nansen's "First Crossing of Greenland" or Peary's "Northward over the Great Ice." 9. Recall facts that you have already learned about the Eskimo: how they live, what they eat, etc. (pp. 5–7).

V. COUNTRIES SOUTH OF THE UNITED STATES

Mexico. 1. Describe the relief of Mexico. 2. In what zones does it lie? 3. Name the two large peninsulas. 4. What river forms a part of the northern boundary? 5. What salt waters border Mexico? 6. Find the capital. 7. Find the largest seaport. 8. Compare the coast line with that of the northeastern part of the United States.

Map study

Central America. 9. Name the countries. 10. What sea lies to the east? 11. What large lake do you find? 12. Examine the small map of the Panama Canal. Describe the route proposed. 13. Name the two cities at the two ends of the canal.

West Indies (Fig. 322). 14. Find the Bahamas; the Lesser Antilles; the Greater Antilles. 15. Name the four largest islands in the West Indies. 16. In what zone do the West Indies lie? 17. What waters bathe the shores of the West Indies? 18. What nation owns the Bahamas? 19. What other nations have possessions in the West Indies? 20. Locate the Bermuda Islands on the map, Figure 134.

1. Mexico (Fig. 354)

Area, population, and government

Mexico is about one fourth as large as the United States, and has nearly one sixth as many inhabitants.

After Columbus discovered the West Indies, the neighboring coast of the mainland was visited and settled. Thus the Spaniards came into possession of Mexico as well as some of the country to the north which now belongs to the United States.

The explorers found so much gold and silver in Mexico that many Spaniards settled there. They opened mines, and started coffee plantations, farms, and cattle ranches. Besides the descendants of these Spaniards there are many Indians and half-breeds in this country.

Mexico was for a long time a Spanish colony, but Spain governed the country so badly that the people finally rebelled, and in 1821, won their independence. Ever since that time Mexico has been a republic, with the capital at Mexico City, where the president lives.

Why much of the country has not a tropical climate

The Tropic of Cancer crosses Mexico north of its central part, showing that a large portion of the country is in the tropical zone. Yet Mexico has a much cooler climate than this fact suggests. The reason is that much of the country is very high land; and, as you have learned (p. 25), the climate is cooler on such high land.

The Cordillera of western United States extend into Mexico, and there are broad plateaus, in many places more than a mile in height, crossed by mountain ranges which rise another mile, or more. Several of the loftiest peaks are volcanoes, made of lava (Fig. 355); and some of the peaks are so high that they are always covered with snow, in spite of the fact that they lie in the torrid zone. From these facts it is plain that the climate of Mexico is tropical only on the lowlands near the coast.

The wet and the dry parts

There is heavy rainfall along the eastern coast, and in the southern part. In the central and western parts, on the other

hand, the country is drier, and in places even a desert. This is an extension of the arid belt of western United States.

FIG. 355. — Colima, one of the Mexican volcanoes, in eruption. The column of steam and ashes is two or three miles high. The white patch on the side of the mountain is a lava flow.

In the greater part of Mexico forests are rare, except upon the higher mountains. In fact, there is so little forest on the arid plateau that the inhabitants find difficulty in obtaining wood for fuel. Some they dig from the ground; for some of the arid-land bushes, such as the mesquite, have long, thick roots which make excellent firewood.

Products from forest trees and other native plants

In southern Mexico and on the damp lowlands, on the other hand, there are dense tropical forests. In these are found many valuable woods, such as mahogany, rosewood, and logwood. The rubber tree also grows here, and large quantities of rubber are produced.

One of the most valuable of the native plants is the heniquen, a variety of hemp, which thrives in Yucatan. This and other fibers rank next in value to mineral products, among the exports of Mexico. Most of the fiber goes to the United States.

Another product is the vanilla bean, which grows upon a climbing plant. In the seed-pod are nestled the fragrant beans which are used for making flavoring extracts, for perfumeries, and for medicine. Pepper, made from the dried berry of a tropical plant, indigo, extracted from a berry, and sarsaparilla, from the roots of a tropical plant, are all Mexican products.

Agriculture

1. On the arid plains

(1) *Products by irrigation*

Although the climate of a large part of Mexico is arid, still agriculture is the principal industry. On the arid plains and plateaus there is much farming by irrigation. Here products of the temperate zone are raised, such as wheat, corn, potatoes, and beans. Much fruit also is produced, especially apples, pears, peaches, and grapes.

FIG. 356. — A view in the tropical lowlands of Mexico near the coast, called the "hot lands." The road is bordered by banana trees.

A species of native arid-land plant, called *agave*, or century plant, is of great value. From the juice of the agave the Mexicans obtain an alcoholic drink known as pulque, and another known as mescal. The tough leaves of some varieties of agave contain a fiber which is made into paper and a strong thread; and from the juices of one kind, called the *maguey*, soap may be made. So valuable is the maguey that it is carefully cultivated upon plantations.

FIG. 357. — Interior of a Mexican adobe house.

(2) *Farming methods; and home life*

The Mexican farming methods are generally very crude, being a mixture of ancient Aztec customs and those introduced from Spain several centuries ago. One may still see the wooden plow which barely scrapes the ground; and also the wooden-wheeled cart drawn by oxen.

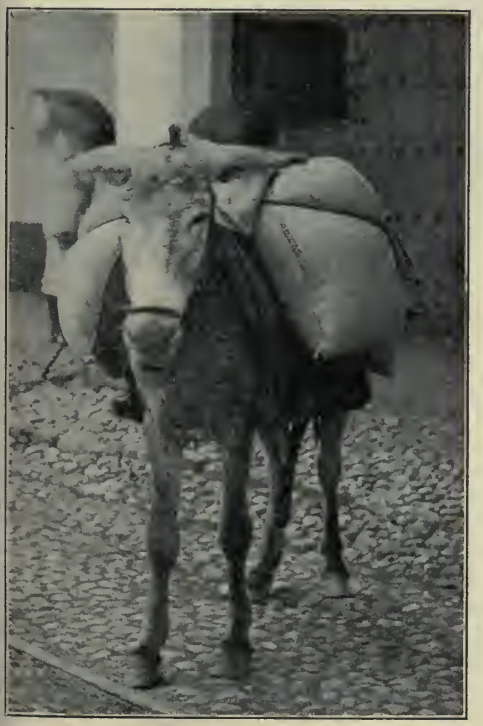


FIG. 358. — A Mexican burro carrying heavy sacks.

There are, however, many farmers who have adopted the same methods of farming that we have; and every year their number is increasing, for Mexico is now advancing rapidly.

The home life of the country people is interesting. Their houses have but one story, and are commonly built of sun-dried bricks, or *adobes* (Fig. 360), held together by layers of mud. Often there is but one room (Fig. 357), the ceiling being made of brush, and the floor of nothing but earth or stones. In this one room the whole family cook, eat, and sleep. Their food consists of very simple materials, such as unraised bread, baked in the fireplace, beans, and sometimes meat, commonly cooked with red pepper.

(3) *Ranching*

So much of Mexico is arid that large sections are suited only to grazing. For this reason, one of the leading industries is ranching. As in our Western States, there are extensive cattle and sheep ranches; and hides, meat, and wool are important exports.

Many horses and mules are raised; but the little Mexican ass, or *burro*, is one of the most common draft animals (Fig. 358). It is about as large as a small pony, and is made to do all kinds of work. The burro is a very patient beast, and is able to carry heavy loads and endure much hardship.

Hogs are fattened in large numbers, and there are many goats. The latter are much prized, not only for their meat and hides, but also for their milk, which is used as a food and for making cheese.

FIG. 359. — Coffee tree and berries growing in the shade of higher trees.

On the damp lowlands, the farm products are quite different from those on the arid plateau. There, rice, sugar cane, and cotton are raised; also tropical fruits, such as oranges, bananas (Fig. 356), cocoanuts, and pineapples. Upon the slopes between the tropical lowlands and the temperate plateau much cotton, tobacco, and coffee are grown.

2. On the lower, humid lands

Coffee, one of the most valuable products of Mexico, requires a rich soil, abundant moisture, a warm climate, and plenty of shade. In order to secure shade, the coffee bush, which reaches a height of from ten to fifteen feet, is planted in the shade of higher trees. A white blossom appears as early as March, and after the flower has fallen off, the coffee berry begins to grow (Fig. 359). It resembles a dark red cranberry. The coffee is inside of this berry in the form of two kernels, and the husk must be removed in order to prepare these kernels for market.

Mexico is a great mining country, producing more silver than any other country in the world. Much gold, copper, lead, and zinc are also mined, and recently great quantities of petroleum have been found on the coastal plain, as is the case also in Texas and Louisiana. A large amount of iron is known to exist in several parts of the country. At one place, near DURANGO, there is an iron mountain which contains an enormous amount of very rich ore. Here blast furnaces have been erected, and steel rails and other iron products are manufactured. Find this city on the map.

Mining

1. Extent of minerals

One great drawback to mining in Mexico is the lack of good coal. Another is the lack of easy tranportation. A third is the fact that much of the region cannot easily be explored for ore. In fact, some parts of the country are still occupied by tribes of savage Indians, who prevent miners from coming in. Still another difficulty is the old-fashioned methods of mining used by many of the Mexicans. The methods, however, are being improved, since many of the leading mines are now owned by Europeans, Americans, or educated Mexicans. Mining is now rapidly developing in Mexico, and more than half of

2. Difficulties in the development of mining

the exports of the country are minerals. Fibers are the second export in importance, and coffee is the third.

Because of the ignorance of the working people, and the scarcity of coal, there is not a great deal of manufacturing in Mexico; and that which is done is largely carried on by hand. Some of this hand work is very beautiful, for even the uneducated Mexicans are quite artistic.

Manufacturing

There are large tobacco factories in the tobacco district, and smelters in the mining regions. Some earthenware also is manufactured, and some cotton cloth. The manufacture of cotton is growing rapidly in importance, and more money is now invested in cotton mills than in any other form of manufacturing.

There are a few large cities, the greatest being the capital, MEXICO CITY (Fig. 360), built on the site of an ancient Aztec Indian city. It is situated on a high plateau and therefore, although so far south, has a cool climate. In this city, as elsewhere in Mexico, there are many fine churches and other notable buildings. Another city in the interior of Mexico is PUEBLA, founded in 1531. It also is situated near one of the ancient cities, or pueblos, of the Aztecs. SAN LUIS POTOSI is a third important Mexican city. Locate each of these cities.

Leading cities

1. In the interior

FIG. 360. — A view of a part of Mexico City, with the snow-capped cone of the volcano, Popocatepetl, rising in the distance.

Since the eastern coast of Mexico is low and sandy, it has no good harbors. The largest two cities there are TAMPICO and VERA CRUZ, whose harbors are protected by breakwaters. There are some good harbors on the western coast, one of the best being that of ACAPULCO.

2. On the coast

2. Central America (Fig. 354)

Of the six Central American republics, the smallest is Salvador; the next Costa Rica. Nicaragua, Honduras, and Guatemala are about equal in size. These are all in North America; but the Republic of Panama is partly in North America and partly in South America. It has an especial interest for us. Why (p. 244)?

Names of the countries and their government

These six countries are independent of one another, and each has a form of government modeled after that of the United States. British Honduras (or Belize) is a colony of the United Kingdom.

Spanish is the language spoken in all these countries; but the great majority of the people are Indians, negroes, and half-breeds. The governments are not very good, and the people are often engaged either in civil wars or in fighting with one another.

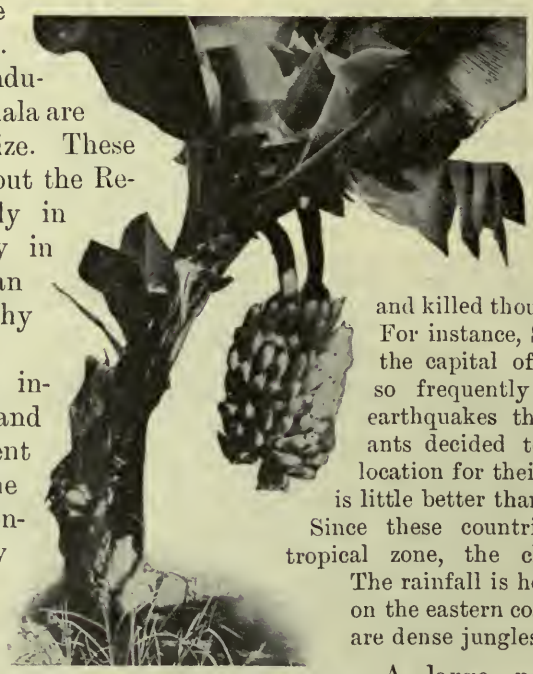


Fig. 361. — Bananas as they grow, hanging in great bunches from the broad-leafed banana tree.

Most of Central America is mountainous, and it has volcanic eruptions and earthquakes of great violence. The earthquake shocks have leveled towns and killed thousands of people. For instance, San Salvador, the capital of Salvador, was so frequently destroyed by earthquakes that the inhabitants decided to choose a new location for their city; but this is little better than the old one.

Character of the region

Since these countries lie in the tropical zone, the climate is hot. The rainfall is heavy, especially on the eastern coast, where there are dense jungles.

A large part of these countries is occupied by dense tropical forests, from which are obtained mahogany, rosewood, and other valuable cabinet and dye woods. The rubber tree also grows here, and the production of rubber is an important industry.

The products

As in Mexico, coffee is raised on the hill slopes in the shade of the forest trees. Costa Rica is one of the most important coffee-producing districts (Fig. 364). Bananas (Figs. 361 and 362), sugar, tobacco, indigo, and cocoa are other products.

Fig. 362. — Bunches of bananas piled by the side of the railroad, awaiting shipment.

The largest city in Central America is New Guatemala, the capital of Guatemala.

The leading city

FIG. 363. — Some of the animals that live in the tropical part of North America.

FIG. 364. — Drying coffee berries in Costa Rica. There are tons of coffee berries here spread out in the sun to dry. After they are dried, the husk is removed and the bean is then shipped away.

This city, which was formerly situated at the base of two very active volcanoes, was removed to a safer site; hence the name *New Guatemala*.

3. The West Indies (see the Map, Fig. 322)

A chain of islands reaches from the Yucatan and Florida peninsulas to the mouth of the Orinoco River on the South American coast. These islands inclose the Caribbean Sea; and, also, with the aid of the peninsulas of Florida and Yucatan, the Gulf of Mexico. All of this archipelago, excepting the Bahamas, lies entirely within the tropical zone.

Location and names of the groups of islands

These islands, scores of which are very small, are called the West Indies, because Columbus thought he had reached India. With the exception of the Bahamas, they are also known as the *Antilles*. Those on the north, including the larger ones, are called the Greater Antilles; and those on the south, the Lesser Antilles.

Two of the Greater Antilles have been already described (p. 241). What do you remember about them? All the other large islands are mountainous, with fertile valleys and small plains.

The Greater Antilles

South of Cuba lies the island of Jamaica, the third in size in the West Indies, and a possession of Great Britain. Kingston is the capital and the largest city. The inhabitants are mainly negroes and mulattoes, there being fully forty blacks to one white person.

1. Jamaica

The chief occupation is agriculture, and the women are employed in outdoor work as much as the men (Fig. 365). One of the main products is sugar cane. Early vegetables and fruits, such as oranges and bananas are also raised. Jamaica ginger is obtained from the root of a plant that grows in this island.

Haiti was the first large island discovered by Columbus, and on it he made settlements and opened mines. Like the other Greater Antilles, this became an important Spanish colony; but Spain lost one island after another, the two last to go being Cuba and Porto Rico. Haiti has long been independent, and there are now two republics in the island — Haiti and Santo Domingo. The capital of the former is Port au Prince; and of the latter, Santo Domingo. Most of the inhabitants are negroes and half-breeds, descendants of the slaves of the Spanish settlers; but there are more white people in Santo Domingo than in

2. Haiti

Haiti; and Santo Domingo is the more progressive.

Sugar, tobacco, coffee, and bananas are the chief products. There are valuable woods covering much of the island, and there is some mineral wealth; but little is done with these resources.

Most of the islands among the Lesser Antilles are possessions of Great Britain, though some belong to other nations. For instance, Martinique and Guadeloupe belong to France; St. Thomas and St. Croix to Denmark; and some islands to Holland. The products of the Lesser Antilles are similar to those of the other West Indies, the most important being sugar cane.

The Lesser Antilles

These small islands are volcanic cones. Most of the volcanoes are now extinct, but in Martinique and in St. Vincent there are active volcanoes. One of the most terrible volcanic eruptions ever recorded occurred in Martinique in 1902. After being quiet for about fifty years, Mont Pelée (Fig. 366) suddenly burst forth and completely destroyed the beautiful city of St. Pierre, which was situated at its base. In a few seconds all of the inhabitants, more than twenty-five thousand people, were killed by the cloud of steam and hot ashes which descended upon them.

FIG. 365. — Native women of Jamaica going to market, each with a burro, or small donkey, loaded with baskets of vegetables and fruits.

North of Haiti and Cuba are several hundred small islands called the Bahamas, which belong to Great Britain. A number of these are inhabited, and on one, New Providence, is the city of NASSAU.

The Bahamas

One of the products is the sponge, which grows in the clear, warm waters of the Bahama banks. To obtain sponges, the natives either cruise about in boats, raking them up, or they dive into the clear water, tearing them from the bottom.

FIG. 366. — The ruined city of St. Pierre after the terrible volcanic eruption of 1902.

Early vegetables, pineapples, oranges, and cocoanuts are raised by the inhabitants, who are chiefly negroes. One of the industries, as on the neighboring coast of Florida, is caring for winter visitors. Why should people wish to go there in the winter?

4. THE BERMUDA ISLANDS

Far out in the open ocean, east of North Carolina (Fig. 134), is a group of small coral islands, called the Bermuda Islands, which belong to Great Britain. They produce early vegetables, and flowers, such as Easter lilies, most of which are shipped to New York.

The climate is so mild that these islands are visited every winter by large numbers of people from the United States who wish to escape the cold of our northern winter. Most of these visitors stay at HAMILTON, the capital.

Review Questions and Suggestions

MEXICO: *Questions.* 1. How does Mexico compare with the United States in area and population? 2. What kind of government has it? 3. Give some facts about the history of Mexico. 4. Why is it not a very hot country, in most parts? 5. What about its rainfall? 6. What are the products from the forest trees and other native plants? 7. What agricultural products are obtained by irrigation? 8. Describe the farming methods and the home life in the arid lands. 9. Where is ranching carried on? What animals are raised? 10. What products are obtained from the lower humid lands? 11. What about the extent of minerals in Mexico? 12. Mention several difficulties in the development of mining there. 13. What is the condition of manufacturing? 14. Name and locate the leading cities in the interior. 15. On the coast.

Suggestions. 16. Find out why coffee raising requires special care. 17. Find an article of furniture made of mahogany. 18. Walk toward Mexico City. 19. What reasons can you give for its location? 20. Who is the president of Mexico? 21. Why are there no large rivers in Mexico? 22. Make a sketch map of Mexico.

CENTRAL AMERICA: *Questions.* 23. Name the countries here, and tell their form of government. 24. What can you tell about the people? 25. Describe the region. 26. What are the products? 27. Name and locate the leading city.

Suggestions. 28. Why will harbors at each end of the Panama Canal be necessary? 29. Make a sketch map of Central America. 30. Name the capitals of each of the countries.

THE WEST INDIES AND THE BERMUDAS: *Questions.* 31. Locate the West Indies, and give the names of their principal groups. 32. Tell what you can about the government, people, and products of Jamaica. 33. What can you tell about Haiti? 34. State important facts about the Lesser Antilles. 35. About the Bahamas. 36. How are the Bermudas important? Locate them.

Suggestions. 37. How does each of the largest four of the West Indies compare in area and population with New York State? With your own state? (See tables in Appendix.) 38. Find out more about the eruption of Mont Pelée.

VI. REVIEW OF NORTH AMERICA

1. THE UNITED STATES

Population

There are now over ninety-two million persons living in the United States, while in Canada, Mexico, and Central America there are only about twenty-five million. It is plain, therefore, that about four fifths of all the inhabitants of North America are found in our own country.

Distribution of population

The forty-eight states in our Union have been settled by people who came from the East. First, the Atlantic coast was settled by immigrants from England and other countries of Europe. Then there was a movement of pioneers westward across the Appalachian Mountains and the Mississippi Valley. Finally, settlers pushed across the Western mountains, until the Pacific coast was reached.

While all parts of the country have now been settled, by far the greater part of the population is still found in the Eastern half. In Figure 367, in southeastern Indiana, you will find a star, which shows the center of our population. There are just about as many persons in the United States living east of this star as west of it, and as many north of it as south. That is what is meant by the center of population. How far do you live from this point?

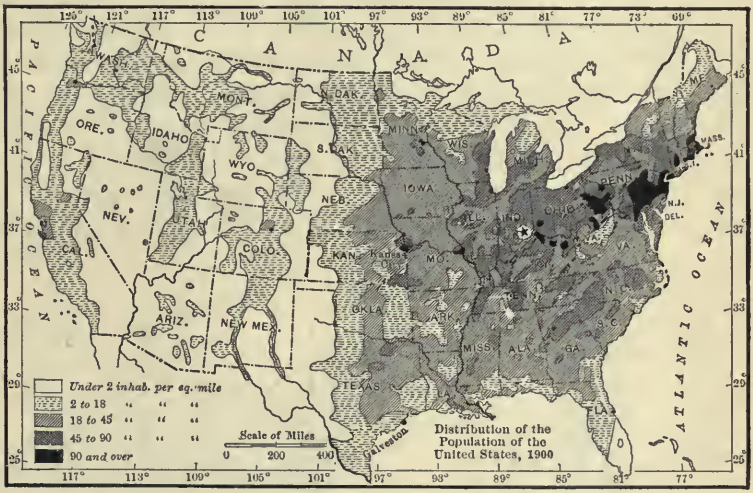


FIG. 367. — Distribution of population in the United States, 1900.

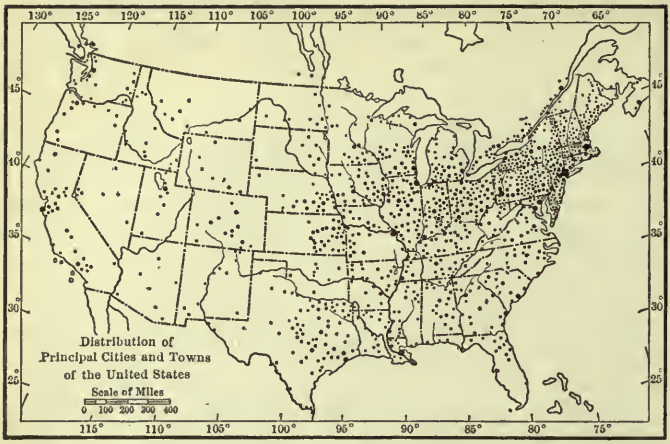


FIG. 368.—Map showing distribution of cities.

Note how closely Figure 368, showing the distribution of cities, corresponds to Figure 367. Which states seem to have the most cities? Name in the order of their size (Fig. 369) the six states having the largest population.

About two thirds of our ninety-two million inhabitants live either in the country, or in towns with a population of less than eight thousand. In Mexico and Canada the proportion living in the country is still greater. In other words, the great majority of persons in North America are country people.

Of the great occupations in the United States, that of agriculture is most important. More than one third of all our workers are engaged in that industry.

Agriculture

Conditions in the United States are very favorable to agriculture. In no part, except on the highest mountains, is it too cold to raise valuable crops; and in most parts the soil is fertile. Name some states that have very fertile soil (pp. 151, 174). Name a section where the soil is not so good (p. 116). Why is hilly and mountainous country not well suited to farming (p. 116)?

1. Climate and soil

Although farming is by far our greatest industry, it is surprising what a small part of all our land is now really under cultivation.

2. Proportion of land that is cultivated

Figure 370 makes this clear by the use of a circle. The circle represents all the land in the United States, and the portion marked *improved* shows the part that is now used to produce crops. The part of the circle marked *unimproved* shows the proportion that has not yet been plowed, or otherwise improved, so as to raise crops. Some of it is swamp land, some is covered with forest or underbrush, some is used for grazing. From this figure it is plain that less than *one fourth* of all the land in our country is now culti-

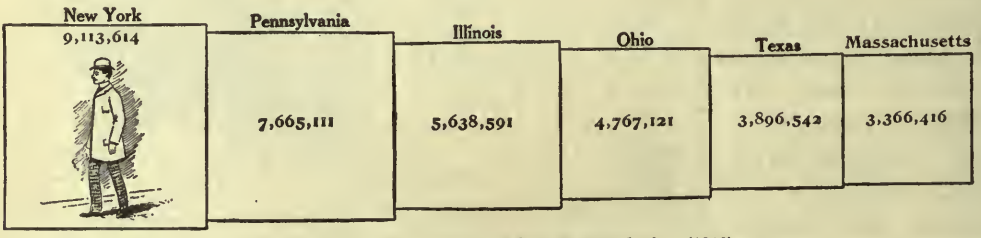


FIG. 369.—The six states with largest population (1910).

vated; and more than *one half* is not even in farms.

3. Why so little land is under cultivation

One reason why there is so little cultivated land is that, as yet, only the best has been farmed. When there is more need of farms, some of the poorer land will be made to yield crops. There are two great difficulties, however. A large part of the portion of the circle marked *not in farms* represents the arid lands of the Western States. Locate these (Fig. 408). Which states receive an abundance of rain? Which states suffer for want of it? What is the reason for this (p. 205)?

People will not be eager to receive farms there, even as a gift from the government, until they are able to irrigate them. What is the government now doing to make some of this land more attractive to settlers (p. 213)?

A second reason why much land remains uncultivated is that there is a great deal of mountainous country. What are the names of our principal

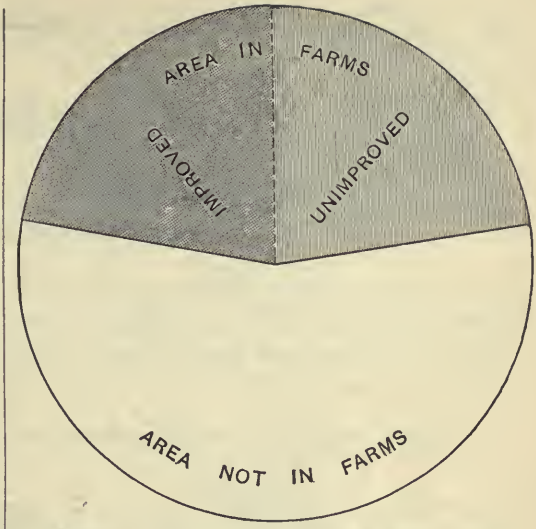


FIG. 370. — Extent of farming in the United States.

mountain systems? Through what states do the Appalachian Mountains extend? The Cordillera? What mountains, besides the Rockies, are included in the Cordillera? Probably most of the mountainous and arid lands never can be cultivated. Why?

Figure 371 shows the regions that are most extensively engaged in raising corn. What states are included? In 1908 about two billion bushels were produced. How many bushels is that for each of our inhabitants? How is corn cultivated, and what are its uses (p. 177)? Which are the six leading states in corn production, and how do they rank as compared with one another (Fig. 372)?

4. Grains

Many of the states

FIG. 371. — The corn regions of the United States.

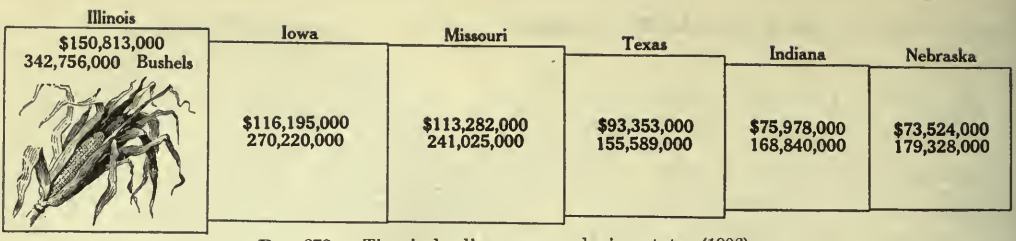


FIG. 372. — The six leading corn-producing states (1906).

that raise corn also raise much wheat. Figure 373 shows the principal wheat regions. Where are they? What can you tell about wheat in the valley of the Red River of the North (p. 178)? What are the uses of wheat? What states on the Pacific coast produce wheat? Name the six leading wheat states in the order of their importance (Fig. 374).

Corn and wheat are our most valuable food crops. Why is so little of either raised in the western half of the United States (p. 205)? Why so little in New England (p. 116)? What other grains do we raise, and for what is each used?

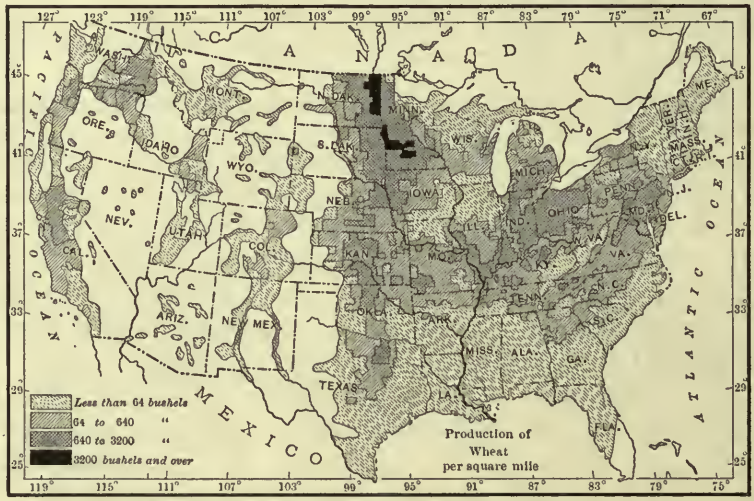


FIG. 373. — The wheat regions of the United States.

The cotton belt is confined entirely to the southeastern portion of the country,

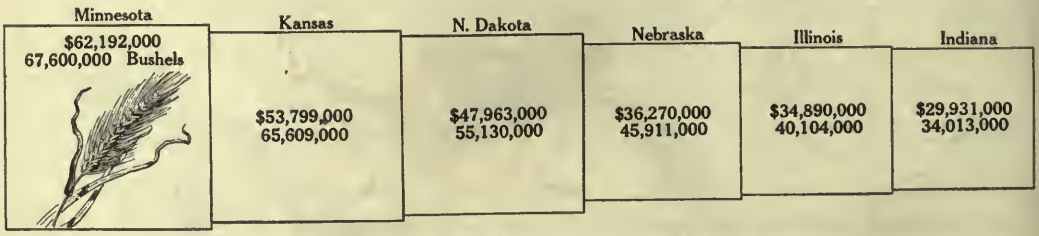


FIG. 374. — The six leading wheat-producing states (1907).

as shown in Figure 375. Why? Name the principal cotton-raising states and give their rank (Fig. 376). What do you know about the growth and uses of cotton (pp. 152 and 162)?

5. Cotton, sugar cane, and rice

Where in these states are sugar cane and rice grown? How is each cultivated (pp. 153 and 154)? How does Louisiana rank with our dependencies in the production of sugar cane (Fig. 377)? Which of our dependencies produce large amounts of cane sugar (Fig. 377)? What are the other sources of sugar? Where is beet sugar produced (pp. 153, 181)? Where is maple sugar made (p. 133)?

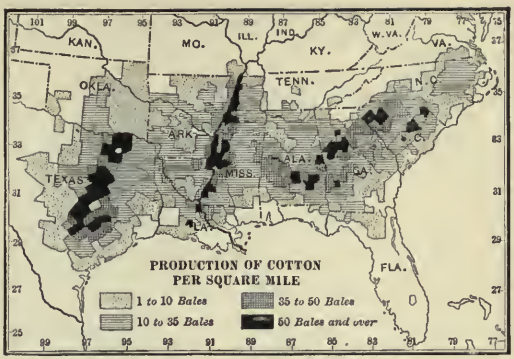


FIG. 375.—Map showing the cotton-producing states.

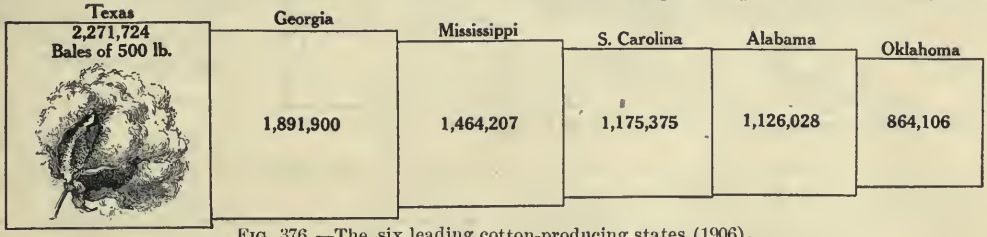


FIG. 376.—The six leading cotton-producing states (1906).

According to Figure 378, what states are largely engaged in tobacco growing? What is the appearance of the plant, and how is it prepared for use (pp. 155, 180)? Name and locate several cities that are noted for tobacco manufacture and trade (pp. 155, 196). In what section of New England is much tobacco raised (p. 117)?

6. Tobacco

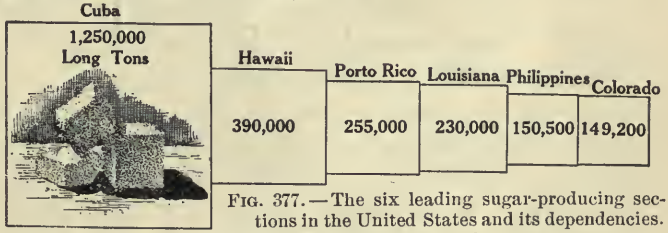


FIG. 377.—The six leading sugar-producing sections in the United States and its dependencies. Colorado, beet sugar; others, cane sugar.

FIG. 378.—Map showing the tobacco-producing states.

FIG. 379. — Map showing the leading fruit-growing regions of the United States.

Name fruits and vegetables that are extensively raised in the United States. Figure 379 shows the sections that produce large quantities of fruit. What fruits are grown along the Eastern coast (p. 117); in the Southern States (p. 156); in California (p. 209)? In Florida, Cuba, and Porto Rico? Why is the region near the Great Lakes especially suited to fruit raising (p. 117)? What fruits are extensively grown there?

7. Fruits and vegetables

Why is truck farming especially important in New England (p. 116)? Where are early vegetables extensively raised (p. 155)?

Name and locate the principal irrigated sections in our western arid lands (Fig. 380). What are their products (pp. 208–213)?

Figures 381–386 show the principal states from which other important farm products come. Study each of them.

How does the value of hay (Fig. 381) in New York compare with that of corn in Iowa, and of wheat in Minnesota? Note that the states raising most

8. Other leading farm products

FIG. 380. — Map showing where irrigation is carried on in United States.

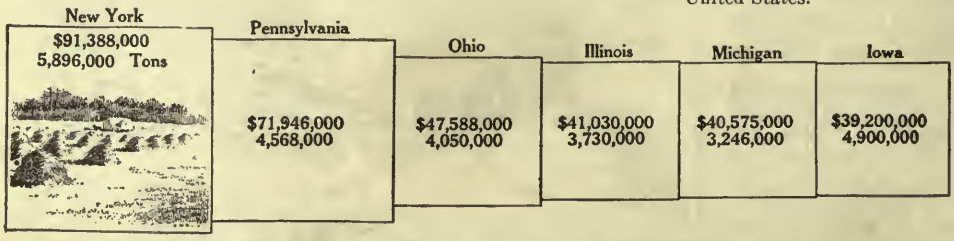


FIG. 381. — The six leading hay-producing states (1907).

corn (Fig. 372) correspond rather closely with those raising most hogs (Fig. 382). Why is that? Name the six leading dairy states (Fig. 383).

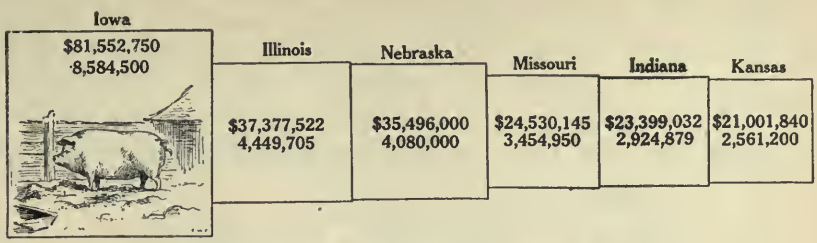


FIG. 382. — The six leading hog-producing states (1906).

9. Grazing

Point out, on the map (Fig. 138), the portions of the country largely given up to grazing. Why these? Relate how cattle ranching is carried on (p. 182); also sheep ranching (p. 214). Which states are most important in these industries (Figs. 384, 385)? What are the uses of ranch cattle (p. 194)? Of sheep (p. 215)? In which states are most horses raised (Fig. 386)?

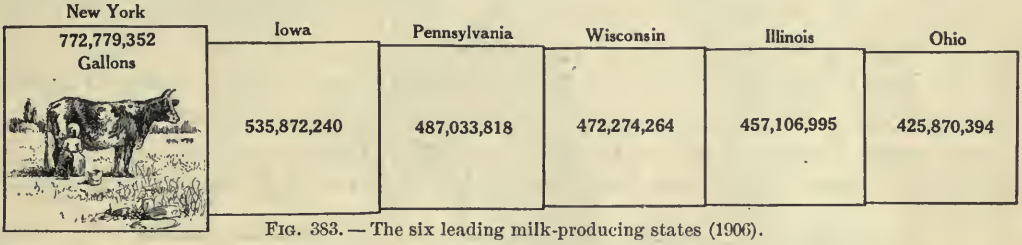


FIG. 383. — The six leading milk-producing states (1906).

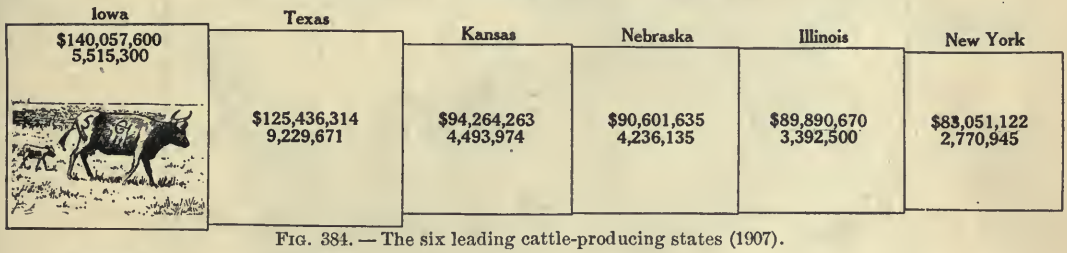


FIG. 384. — The six leading cattle-producing states (1907).

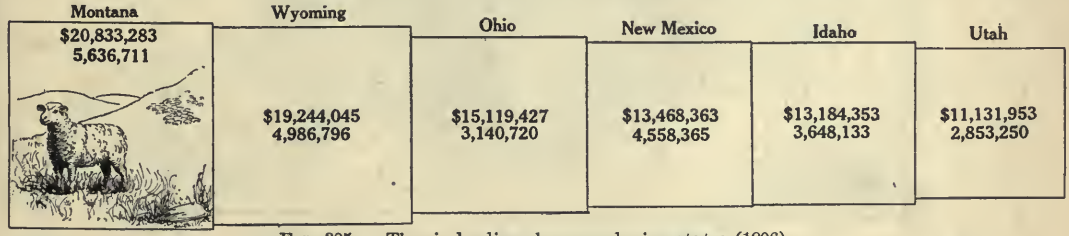


FIG. 385. — The six leading sheep-producing states (1906).

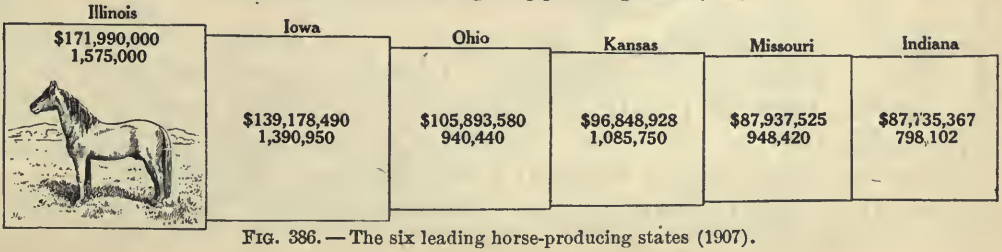


FIG. 386. — The six leading horse-producing states (1907).

Lumbering

Figure 387 shows the distribution of the forests in the United States. Describe the industry as it is carried on in Maine (p. 118); in the Southern States (p. 158); in Wisconsin (p. 185); in the Northwest (p. 220). Why these differences? Which are the most common kinds of trees in each section (Fig. 388)? What are the products of the forests besides lumber (pp. 133 and 164)? What states produce the greatest amount of lumber at present (Fig. 388)? Where are the leading forest reserves (Fig. 387)? Of what value are they?

In what sections is fishing especially important (Fig. 390)? What fish are caught on our Eastern coast (p. 120)? On our Pacific coast (p. 222)? Tell what you can about the fishing industry in Alaska (p. 239). Describe how cod fishing is carried on (p. 122); salmon fishing (p. 222); the oyster industry (p. 159).

Fishing

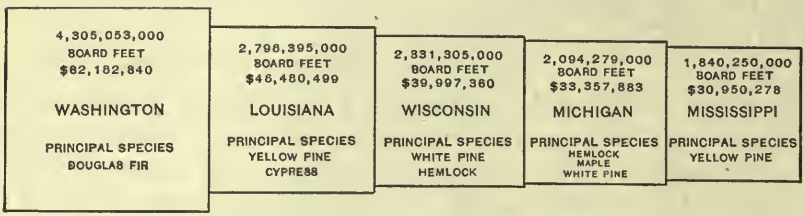


FIG. 388. — The five leading lumber-producing states (1907).

About four hundred thousand men in our country are employed in mining. How many different metals can you name? How many other mineral products can you mention?

Mining

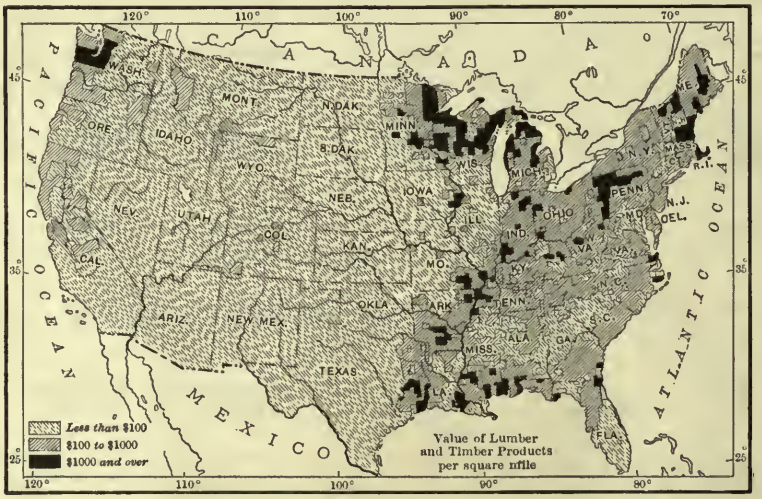


FIG. 389. — Value of lumber and timber products of United States.

Of all the minerals, the *fuels* are probably the most important. Why? What kinds are there? Figure 391 shows how extensive the *coal beds* are. Name the states in

1. The fuels

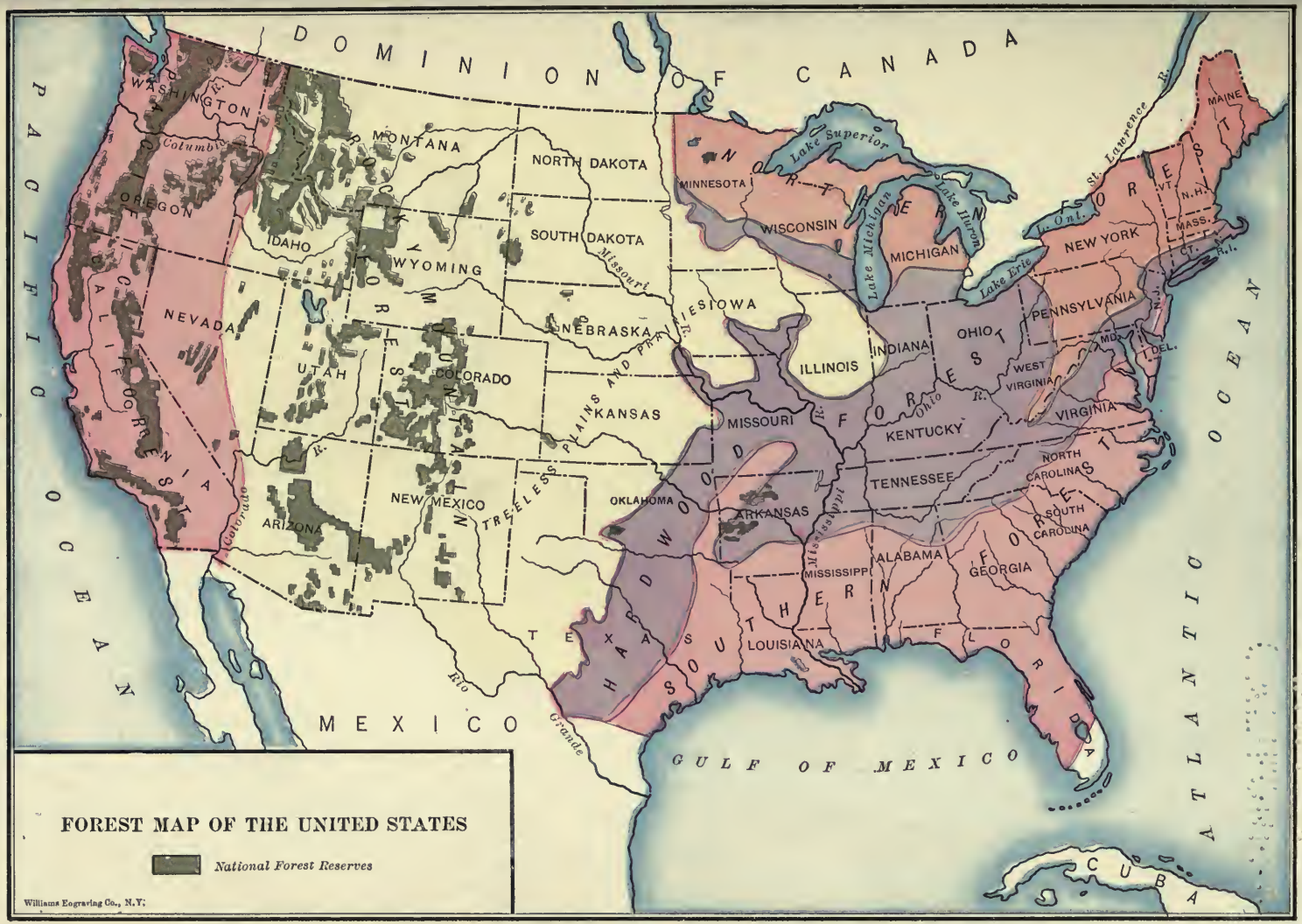

DOMINION OF CANADA
PACIFIC OCEAN
ATLANTIC OCEAN
MEXICO
GULF OF MEXICO
CUBA
WASHINGTON
OREGON
CALIFORNIA
NEVADA
IDAHO
MONTANA
WYOMING
UTAH
COLORADO
ARIZONA
NEW MEXICO
NORTH DAKOTA
SOUTH DAKOTA
NEBRASKA
KANSAS
OKLAHOMA
TEXAS
MINNESOTA
IOWA
MISSOURI
ARKANSAS
LOUISIANA
WISCONSIN
ILLINOIS
MICHIGAN
INDIANA
OHIO
KENTUCKY
TENNESSEE
MISSISSIPPI
ALABAMA
GEORGIA
FLORIDA
SOUTH CAROLINA
NORTH CAROLINA
VIRGINIA
WEST VIRGINIA
PENNSYLVANIA
NEW YORK
MAINE
VT.
N.H.
MASS.
R.I.
CT.
N.J.
DEL.
MD.
Lake Superior
Lake Michigan
Lake Huron
Lake Erie
L. Ont.
St. Lawrence R.
Missouri R.
Mississippi R.
Ohio R.
Columbia R.
Colorado R.
Rio Grande
ROCKY MOUNTAIN FOREST
PLAINS AND PRAIRIE TREELESS
NORTHERN HARDWOOD FOREST
SOUTHERN HARDWOOD FOREST
FOREST MAP OF THE UNITED STATES
National Forest Reserves
Williams Eograving Co., N.Y.

FIG. 387.

which the greatest quantities of coal are mined (Fig. 392). Of what importance is it that there are coal fields in so many parts of the country? What kinds of coal are there? What are the differences between them (p. 125)? Describe a coal mine (pp. 125–126). What are the uses of coal?

Name the chief sections in which petroleum and natural gas are found (Fig. 394.) Tell also how they have been produced and what their uses are (pp. 123–124).

2. Iron ore

The ores of iron are among the most important of the mineral products. Why so important? Where are the principal iron-producing regions (Fig. 391)? How is pig iron made (p. 128)? Why is not the Lake Superior district a favorable place for smelting iron ore? Name the six states that lead in production of iron ore (Fig. 393).

3. Precious metals

Describe three methods of gold mining (p. 216). What

FIG. 390. — Map showing distribution of fish.

FIG. 391. — Map showing the distribution of deposits of coal and iron in the United States.

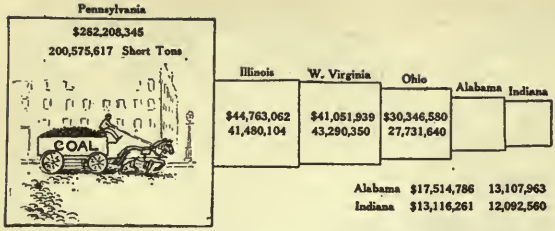


FIG. 392. — The six leading coal-producing states (1906).

can you tell about gold and silver mining in the Western States (pp. 216–218)? In what states is most gold and silver found (Figs. 395, 396)? How does the value of the gold produced in the six leading states (Fig. 395) compare with that of the silver in the six leading states (Fig. 396)?

What states are most noted for copper mining (Fig. 394)? Describe

that industry in two of the leading sections (pp. 188, 217, 230). Where and how is stone quarrying carried on in New England (p. 123)? How is salt obtained in New York (p. 123)? What other valuable mineral products can you name (pp. 161, 189, 219)?

4. Other mineral products

The four occupations that have been named furnish the *raw materials* for our

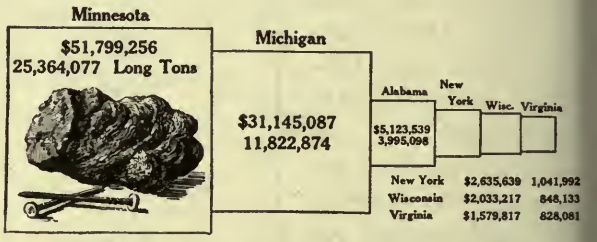


FIG. 393. — The six leading iron-producing states (1906).

FIG. 394. — Mineral regions of the United States.

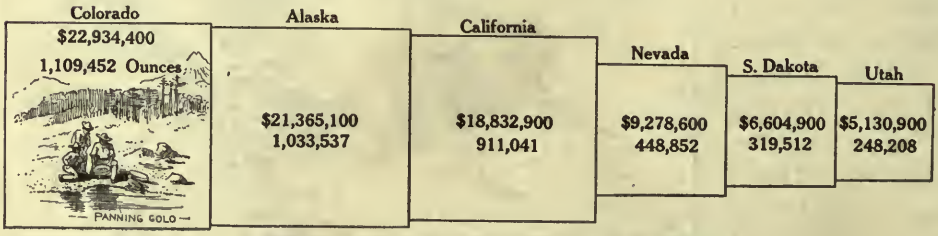


FIG. 395. — The six leading gold-producing states (1906).

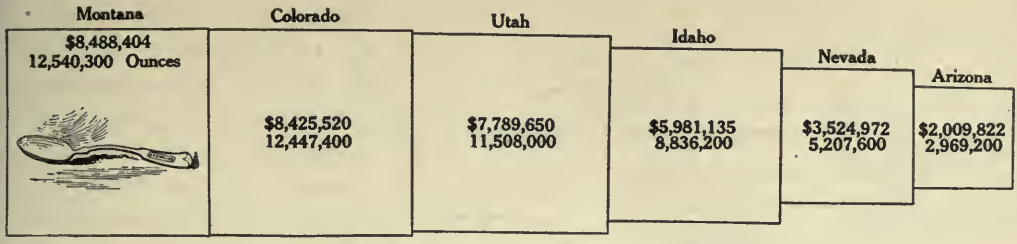


FIG. 396. — The six leading silver-producing states (1906).

food, clothing, and shelter. In the main, these four occupations, as stated, lead people to live in small towns or in the country.

Occupations of country and of city

Persons engaged in the three other great occupations live for the most part in cities. These are manufacturing; the transportation of goods; and buying and selling, or trading.

Figure 397 shows the principal manufacturing sections in the United States. What states do they include? How does it happen that New England very early developed cotton manufacturing, although it raises no cotton (p. 131)? What other kinds of manufacturing are important there (pp. 128–133)? Name several of the leading manufacturing centers there, and tell the kinds of work in each. What states lead in textile manufactures (Fig. 398)? Where are the cotton and wool obtained?

Manufacturing

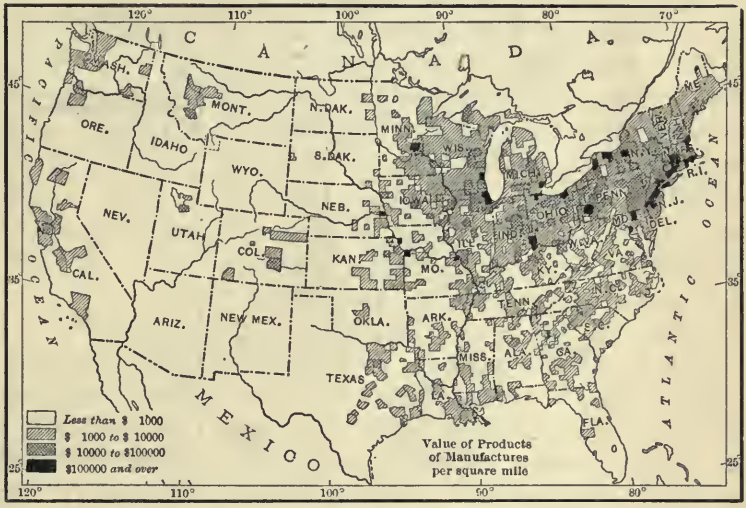


FIG. 397. — Map showing the leading manufacturing districts in the United States.

What manufactures besides textile goods (pp. 128–133) are very important

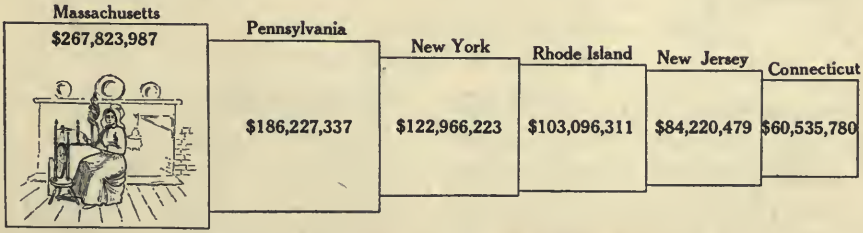


FIG. 398. — The six leading textile manufacturing states.

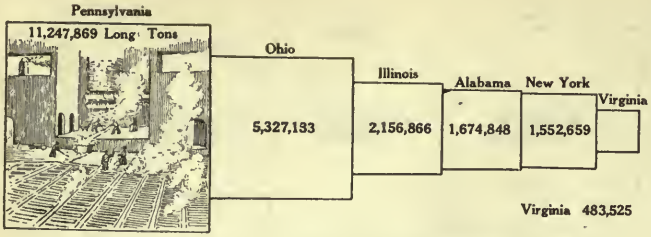


FIG. 399. — The six leading pig-iron-producing states (1906).

in the Northeastern States? How does the lack of coal mines in New England influence the manufacturing there (p. 129)? What reasons can you give why Pennsylvania leads in iron manufacturing? How are iron and steel made (p. 128)? Name three kinds of iron (pp. 128, 129). Name the six leading states in the production of pig iron (Fig. 399). In iron manufacturing (Fig. 400).

Tell about the manufacture of pottery in the Northeastern (p. 130) and in the Central (p. 191) States; about the manufacture of glass (p. 130); of cement (p. 131); of bricks (p. 130).

Tell about the advance in manufacturing in the Southern States (p. 161). What great advantage does Birmingham enjoy for the manufacture of iron goods (p. 160)? Name other important kinds of manufacturing in the Southern States (pp. 161–164). What are the leading manufacturing centers there, and for what goods is each important?

Into what goods are corn, wheat, and barley manufactured in the Central States (pp. 178, 189)? Name the great centers for the manufacture of flour (p. 179). What can you tell about the manufactures from forest products in the Central States (p. 190)? For what kinds of manufacturing is Chicago important (p. 193)? St. Louis (p. 196)? Cleveland (p. 195)? Kansas City (p. 199)?

How has the abundance of fruits in the Western States led to much manufacturing (p. 222)? Name some flour-manufacturing center in the Far West (p. 230). Name important centers for smelting of ores (p. 223). For what manufactures is San Francisco important (p. 225)? Portland (p. 228)? Seattle (p. 228)?

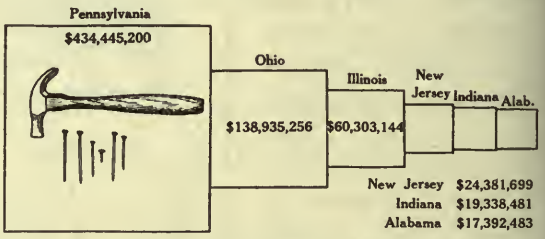


FIG. 400. — The six states leading in iron manufacturing (1906).

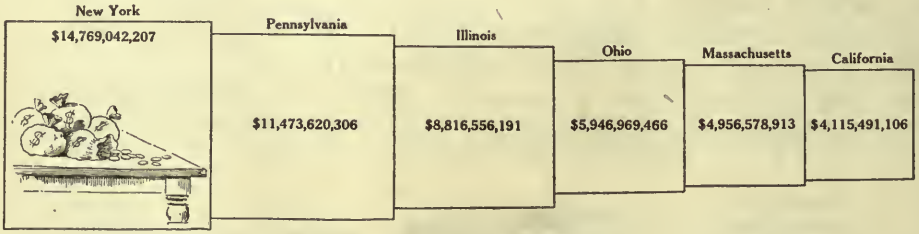


FIG. 401. — The six wealthiest states.

Manufacturing employs more workmen in the United States than any other industry, except agriculture. More than seven million men are engaged in it.

The six wealthiest states are shown

in Figure 401. Note that all these states are extensively engaged in manufacturing, as shown in Figure 397.

Transportation of goods

1. By water

The importance of being able to ship goods by water is clearly shown by the fact that every one of our twenty largest cities is situated on a water route of some kind. (See Appendix for this list.) Name the leading harbors along the Atlantic and Gulf coasts. Name those on the Pacific coast (pp. 225–229). Our seven leading ocean ports, in the order of their importance, are New York, Boston, Philadelphia, Baltimore, New Orleans, San Francisco, Galveston. Locate each.

What can you say about the importance of the Great Lakes for shipment of goods? How are these lakes connected by water with the ocean (Fig. 183)? By examining Figure 402, name the principal navigable rivers in our country.

The Great Lakes carry about twice as much freight as the Mississippi system. Mention some of the principal kinds carried on each.

Where is the Erie Canal? Why has it been so important? Why has it become of less importance than formerly? Where else are canals found (pp. 191 and 257)?

2. By rail

Figure 403 shows an enormous number of railways in the United States. They now carry fully three times as much freight as all the water routes together. In what part of the country are most of them found? Why there? Which section is next best supplied with them? Which portion has fewest lines? How does the location of railway lines on this figure compare with the location of cities on Figure 368?

What is the *direction* of a majority of the railway lines? Count the number of railways that extend east and west across the western half of the continent (Fig. 403). In what city on the Pacific coast does each of the transcontinental lines terminate?

FIG. 402. — Map to show the navigable interior water routes of the United States.

Fig. 403.—Map showing the railroads of the United States.


Lake Superior
Lake Michigan
Lake Huron
Lake Ontario
L. Erie
ATLANTIC OCEAN
GULF OF MEXICO
Bismarck
Duluth
Sault Ste. Marie
Montreal
Ottawa
Minneapolis
St. Paul
Eau Claire
Oshkosh
Toronto
Rochester
Boston
Portland
Deadwood
Pierre
Sioux Falls
Yankton
Sioux City
La Crosse
Madison
Milwaukee
Chicago
Grand Rapids
Saginaw
Lansing
Detroit
Buffalo
Syracuse
Albany
Providence
Fall River
New Haven
Newark
New York
Jersey City
Cheyenne
Omaha
Lincoln
Des Moines
Cedar Rapids
Davenport
Dubuque
Toledo
Cleveland
Scranton
Allegheny
Pittsburg
Harrisburg
Philadelphia
Baltimore
Washington
Denver
St. Joseph
Atchison
Leavenworth
Hannibal
Quincy
Springfield
Peoria
Bloomington
Indianapolis
Columbus
Dayton
Wheeling
Colorado Springs
Pueblo
Topeka
Kansas City
Jefferson City
St. Louis
Evansville
Cairo
Louisville
Cincinnati
Frankfort
Charleston
Richmond
Lynchburg
Norfolk
Wichita
Arkansas R.
Canadian R.
Ft. Scott
Nashville
Knoxville
Raleigh
Charlotte
Memphis
Chattanooga
Wilmington
Ft. Smith
Little Rock
Red R.
Texarkana
Ft. Worth
Dallas
Shreveport
Birmingham
Atlanta
Columbia
Charleston
Jackson
Montgomery
Savannah
Vicksburg
Pecos R.
Austin
San Antonio
Rio Grande
Houston
Galveston
Baton Rouge
Mobile
Pensacola
New Orleans
Tallahassee
Jacksonville
St. Augustine
Tampa
TRUNK LINE RAILROADS
IN EASTERN PART OF
UNITED STATES
Cities with over 1,000,000 New York
Cities with 200,000 to 1,000,000 Buffalo
Cities with 100,000 to 200,000 Omaha
Smaller Cities Duluth
State Capitals Other Cities
Trunk Lines thus
Other Railroads thus
Steamship Lines thus
Scale of Miles
0 50 100 200 300 400
WILLIAMS ENGRAVING CO., N.Y.

Fig. 404.

The number of miles of railroad, in proportion to area, is greatest in the Northeastern and Central States. The names of the principal railroads in the East are shown in Figure 404. Note how the roads come together at the great centers of manufacturing and commerce.

Trade is the third occupation that attracts great numbers of people to cities.

Buying and selling, or trade

Every one knows that it is important to have stores scattered about over the country, in towns and villages, where one can purchase the articles that he needs from day to day.

But there could not well be such stores unless there were great centers of trade where the storekeepers themselves could buy the goods that they wished to sell later. This is called *wholesale trade*, and is one of the leading occupations in the great cities.

Our greatest center for the wholesale trade is New York City. Describe how it is carried on there (pp. 138–139). What goods are sold? Name other great centers for wholesale trade, and some of the goods that are sold. What goods are extensively sold in New Orleans (p. 154)? Memphis (p. 169)? Indianapolis (p. 200)? Denver (p. 230)?

Fully four million persons in the United States are engaged in the transportation of goods and in trade, or in *commerce*, as these two kinds of business together are called.

Dependence of country and city upon each other

The relation between country and city is now clear. About one half of our people are engaged in obtaining raw materials through agriculture, lumbering, fishing, and mining. The remainder are employed mainly in manufacturing these raw materials into useful articles, or in buying, selling, and transporting them. Show by numerous examples how neither class can well do without the other.

Differences in manner of life

Although the two classes are so dependent on each other, the life of one is very different from that of the other. Recall farm life as described on page 176. What idea have you formed of farm life on Southern plantations? Of the ranchman's life (p. 184)? Of the miner's manner of living (p. 231)? The lumberman's (p. 120)? The fisherman's (p. 122)?

Recall on the other hand, what was said about life in New York City (p. 139). Give your idea of factory life; of life in trade and transportation. Which of these several occupations do you consider most attractive? Which least attractive?

It is difficult to say which occupation requires the hardest work, for success demands one's best effort, no matter what the occupation may be. Which are more sure of simple food, clothing, and shelter, those living in the city or those in the country? Why? Which are more independent in general? Why? Which have the better opportunities for amusement? Why? For education? Why? For homes with plenty of light and fresh air? Why?

For many years the population of cities has been increasing more rapidly than that of the country, which suggests that people prefer city to country life. Can you give any reasons for this, in addition to those already mentioned?

Dependence of different sections upon one another

No one place produces all that it needs. Which of your foods are not raised near your home? How about the knives, forks, dishes, and spoons? How about the clothes that you wear?

Because of the climate, water power, soil, or for some other reason, each part of the country is especially fitted for producing certain things; for instance, eastern Kansas, grain; western Kansas

stock; northern Maine, lumber, etc. Indeed, most of the articles used in any part of the country must be brought from other places.

Name the materials that the Montana ranchman needs to obtain from the Southern planter; from New England; from Minneapolis; Chicago. Upon what parts of the United States are the inhabitants of Florida dependent? What do they supply in return? Make a list of materials used in the building of your house and, as far as possible, determine where each one may have come from.

It is plain that the different parts of the country are of vital importance to one another, much as different parts of the body are.

Our relation to our dependencies

In spite of our broad territory, and the enormous number of our products, there are some necessary articles that are either entirely lacking or cannot be produced in sufficient quantities within our own borders in America. Name a few. (See Table of Imports, p. 488.) Mention some that we are therefore glad to receive from Alaska; Cuba; Porto Rico; the Hawaiian Islands; the Philippines. Mention others that they, likewise, are glad to receive from us. State, then, how the United States and its dependencies are of advantage to each other.

2. Other Countries of North America

Canada and Newfoundland

The principal industries in southern Canada and Newfoundland are similar to those in our Northern States. What about agriculture in those countries (pp. 251–252)? Where is coal mined in them (p. 253)? Precious metal (p. 252)? What about grazing (p. 251)? Lumbering (p. 253)? Fishing and sealing (p. 256)? Compare the raw products of southern Canada with those of our Northern States. Name and locate the principal cities; the leading trade route. Mention the chief kinds of manufacturing (pp. 258–260).

Mexico

Describe the surface features and the climate of Mexico (p. 263). What are the agricultural products from its arid plateaus (p. 264)? From its lowlands (p. 266)? From the slopes between (p. 266)? Tell about the forests of Mexico (p. 264); the mining (p. 266). Give some reasons why there is so little manufacturing in that country (p. 267). Locate the principal cities.

Central America and West Indies

Name the six republics of Central America. Describe the surface of the country and the climate (p. 268). Name the principal industries (p. 268). Tell about the canal across the isthmus (p. 244).

Mention the largest islands among the West Indies. What are their chief industries (p. 270)?

3. Relation of United States to Other Countries

Need of our sending away some goods and receiving others

What industries found in the United States are not found, or are little developed, in Canada? In Mexico? In Central America? What industries of any one of the latter countries are not found in the United States?

The United States as a whole, as well as most of its sections, produces far more of some materials than its people can consume. Other important articles must come wholly, or in part,

from other countries. Give examples of each.

If we could not secure a market for our products in foreign lands, we should suffer greatly; and if foreign countries did not provide us with what we need, we should suffer again. Other countries are in the same condition. Show how it is true of Canada; of Mexico. There are excellent reasons, therefore, for a constant exchange of goods among the nations of the world. How does the size of our country give us a great advantage in this respect?

The goods that we send forth are called *exports*, and those brought in, *imports*. Examine the tables of exports and imports on pp. 488 and 489 and note some of the products that we send away and some that we receive, as well as the countries with which we trade.

The names of such goods, and their value

More than half of all our exports and imports are sent by way of New York. Why? Other ports next in importance have already been named (p. 285). What are their names? The total value of our exports in 1909 was $1,250,000,000; of our imports, $757,000,000.

Some imports are allowed to enter the country free; but upon most of them there is a *duty;* that is, a tax for entering our country. This duty is a source of income, or *revenue*, for the government. It is also intended to protect our industries by preventing foreign products from being sold in our country at a lower rate than that at which we can produce them.

Meaning and object of "duties"

However, this sometimes causes hardship. For example, a citizen of the United States, living near the border of Canada, has not been allowed to buy lumber and wood pulp from that country without paying a duty upon them. This causes us to pay a higher price for many articles than we would have to pay if no duty were placed upon them. Under such conditions the boundary line between two neighboring countries becomes a hindrance to trade.

4. Value of Steam and Electricity in Development of North America

The use of steam upon the water ways and railways has been of the greatest influence in the development of our country. A century ago it required two days to travel from New York to Philadelphia, and six days from New York to Boston, the latter journey being possible only twice a week by stage.

Advances made in a century

At that time there were but thirteen daily newspapers in the United States, and neither papers nor books could be sent by mail. To send a letter cost from six to twenty-five cents, according to the distance; and because the expense of carrying letters was great, they were not sent from the smaller towns until a sufficient number were collected to make it worth while.

We can now travel as far in an hour as our forefathers could travel in a day, and with much greater comfort. There are over two thousand daily newspapers, and these, as well as letters, may be sent quickly and cheaply to every section of the country. We can send a telegram to a distant point in an instant, and can talk by telephone with a person hundreds of miles away, even recognizing the tones of his voice. How wonderful these facts would have been to persons living a hundred years ago!

The effect of such mighty changes is seen in every direction. Each year

thousands of carloads of fruit are shipped to Eastern cities from California. If there were no railways, how could such fruits reach these cities? What, then, would be the effect on southern California? Also, how could the corn of the Central States be marketed? And how could furniture, sugar, and coffee be brought to the Western farmer's door?

The importance of these advances

If our railway trains and steamboats should all suddenly stop running, there would be a famine in every large city within a few days. Even now, when heavy falls of snow block the trains for a day or two, the supply of milk, meat, and other foods quickly runs low, and the prices rise to several times their usual value.

When our Union was formed, more than a century ago, many wise persons believed that it was bound to be a failure. Our population was so scattered (Fig. 141) that people living in one part were likely to know and care little about those in other and distant parts. It seemed probable that quarrels and wars would arise, due to differences of opinion, and therefore that our Republic might be split into several rival countries.

Their influence on government

Just the opposite has happened. Our people are closely united in interests, and are working well together. At the same time our boundaries have been so enlarged as to include far more territory than was at first thought possible (Fig. 142).

Aside from that, since 1821, millions of foreigners have settled in this country, representing all the principal races of mankind (See Appendix), and many of the leading languages, religions, and political beliefs of the world. In spite of all this, we have kept in such close touch with one another that our Union has grown stronger and stronger.

Each day, by rail and water, articles are sent to all parts of the country. In all the states the people read the same news every morning; and whatever books are found especially valuable in one section quickly become known in others. Thus we enjoy far better opportunities for education than formerly, and we learn to *know* one another; we have the same thoughts, and we feel a common sympathy. So far as meeting and understanding one another are concerned, our country is really far smaller than it was a hundred years ago; we are living together like one very large family.

PART IV. GENERAL GEOGRAPHY

SECTION I. WINDS AND RAIN

1. Winds [1]

In our study of North America, we have learned that the winds of different sections come from different directions. For example, in the West Indies, in Central America, and in southern Mexico, the winds usually blow from the *northeast;* but on the western side of the continent, all the way from San Francisco to Alaska, the wind blows quite regularly from a *westerly direction.* In the eastern part of the United States, on the other hand, the winds are irregular in direction, although they blow more often from the *west* than from any other quarter.

Principal winds of North America

Many other parts of the earth have regular winds, just as North America has. In fact, there are regions extending all the way around the earth — like wide belts — where the winds come generally from the same quarter. These wind belts are

Principal winds of the earth

FIG. 405. — A diagram to show the principal wind belts of the earth.

[1] Review Part I (pp. 54–59) before studying this section. For latitude, longitude, standard time, and revolution of the earth, see Appendices I and II, pp. 492–499.

shown somewhat clearly by the arrows in Figure 405.

Make a list of the names that you find on this map. Near the equator you find the *Belt of Calms* which is several hundred miles wide. The winds are blowing toward this hot region from both sides. Those on the north are called the *northeast trade winds;* those on the south, the *southeast trade winds.* These trade winds start hundreds of miles away, in the temperate zones, and blow steadily toward the equator, day after day and month after month.

All the air that moves toward the equator in these trade winds must escape somewhere. It really rises in the torrid zone; and since the air is moving *upward,* no wind can be felt in this belt. It is therefore a belt of calms. What winds do blow are usually light and changeable.

The air that rises in the belt of calms flows away, high above the surface, toward the north and the south. It forms the *return trade,* or *antitrade winds,* which blow above the trade winds, and in the opposite direction. Some of this air continues on, far to the north in the northern hemisphere, and far to the south in the southern hemisphere. But some of it settles to the earth in the belts called the *horse latitudes.* Since the air here is coming down, little wind is felt. The horse latitudes, therefore, are also belts of light winds and calms. Beyond the horse latitudes, in each hemisphere, the winds usually blow from a westerly direction. These two wind belts are called, therefore, the *prevailing westerlies.* It is in the northern belt that most of the United States is situated. In what belt do Mexico and Central America lie? What part of North America is in the horse latitudes? Where does the belt of calms cross the New World?

Although eastern United States lies in the belt of prevailing westerlies, its winds are quite irregular. The greatest number blow from the west; but there are also many winds from the north, south, and east. The reason for this is that the direction of the wind is changed by storms, called *cyclonic storms,* which move across the country from west to east. The wind blows from all sides toward the center of such storms, as is shown in Figure 410. Thus, at a certain place the wind on one day may be from the east; then, as the storm slowly moves eastward, the wind at that place changes to south, then to the west, etc.

Irregular winds of eastern United States

2. Rain

Knowing the wind belts of the earth, we have a key to the principal rain belts; for the winds are the water carriers of the earth. Water that rises as vapor is borne along in the air and descends to the earth as rain or snow. It falls in great abundance in some places, and scarcely at all in others.

Relation of winds to rain

Where the wind brings much vapor, there can be an abundance of rain; but where it has little vapor, the rainfall must be light. Winds that blow from the ocean bring the most vapor, for more vapor rises into the air from the ocean than from the land. It is very important, therefore, whether the prevailing winds are from the land or from the ocean.

Principal cause of rain

The regular rain belt; 1. In North America

These facts are well illustrated in the rains of North America. The northeast trade winds, which gather a large amount of vapor from the ocean, deposit it on the northeastern slopes of the West Indies, southern Mexico, and Central America. But the southwestern slopes of the West Indies receive a much smaller quantity of rain; and the western coast of Mexico is quite arid.

Farther north the prevailing westerlies, having traveled a long distance over the Pacific Ocean, likewise cause heavy rains along the western coast of North America (Fig. 406). These winds lose much of their moisture in passing over the western highlands, and the land farther east, therefore, receives very little rain.

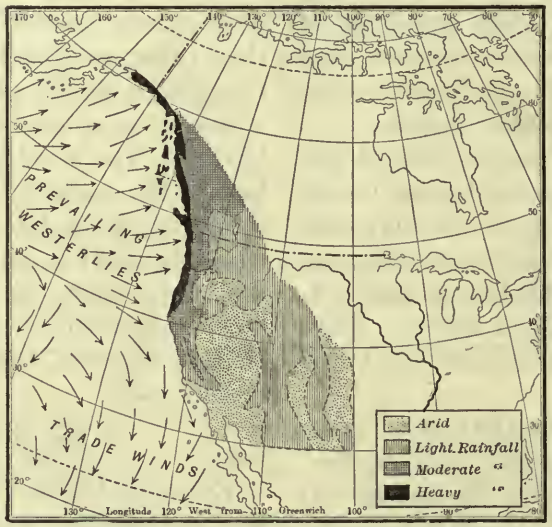


FIG. 406.—The heavy rainfall where the prevailing westerlies blow over the rising coast. What is the condition farther east? What is the case where the trade winds blow? Why?

Northern Mexico and the southwestern part of the United States, which lie within the horse latitudes, receive very little rain and are arid. This is true even at the very seashore in southern California. The reason for this is that the air in the horse latitudes is constantly descending and becoming warmer; and air that is growing warmer will take up more vapor, instead of giving up what it has.

As you study about other parts of the world you will find that the same thing is true there as in North America. This is illustrated in the map showing the rainfall of the world (Fig. 407). There you see that the heaviest rainfall in Europe is on the western side, because the prevailing westerlies blow upon that coast. In the southern belt of prevailing westerlies, in South America also, the heaviest rainfall is on the western coast, and there is little rainfall farther east.

2. In other regions of heavy rainfall

Find places in Asia, South America, and Africa where there is heavy rainfall on the eastern coasts in the trade-wind belts. The belt of heaviest rainfall is in the belt of calms. The reason for this is that the air there rises; and air that is rising is growing cooler and is therefore forced to give up some of its vapor, forming clouds and rain. In the belt of calms it rains day after day, for the air there is steadily rising and growing cooler.

3. In desert regions

The map of rainfall of the world (Fig. 407) shows places where there are less than ten inches of rain a year. Such places are usually deserts, since there is too little rain for most kinds of plants to grow. Some of these deserts lie in the dry belts of the horse latitudes;


ARCTIC OCEAN
GREENLAND
ARCTIC CIRCLE
ICELAND
Hudson Bay
BERING SEA
NORTH AMERICA
ATLANTIC OCEAN
EUROPE
ASIA
JAPAN
MIDWAY I.
TROPIC OF CANCER
PHILIPPINE IS.
GUAM I.
WAKE I.
HAWAIIAN IS.
PACIFIC
EQUATOR
AFRICA
CEYLON
SUMATRA
BORNEO
NEW GUINEA
JAVA
SOUTH AMERICA
INDIAN OCEAN
MADAGASCAR
OCEANIA
TROPIC OF CAPRICORN
AUSTRALIA
INDIAN OCEAN
TASMANIA
NEW ZEALAND
Cape Horn
MEAN ANNUAL RAINFALL OF THE WORLD
Under 10 inches
10 to 20 inches
20 to 60 inches
60 to 120 inches
Over 120 inches
Longitude East
Longitude West
Longitude from Greenwich
Longitude East
WILLIAMS ENGRAVING CO., N.Y.

FIG. 407.

and some lie where mountain ranges have cut off the supply of vapor from the ocean. But some of the largest deserts, like those of Africa, Asia, and Australia, lie in the trade-wind belts.

It may seem strange that the trade winds cause heavy rainfall on the coasts against which they blow, and deserts in other places. The reason is simple. On reaching any coast after blowing over the ocean, they are laden with vapor; and, as they rise over the land, the air is cooled and thus forced to drop some of this moisture. On the other hand, winds that have blown for a long distance over the land contain less vapor; and they keep most of this, unless they happen to pass over land that is high enough to cool the air greatly.

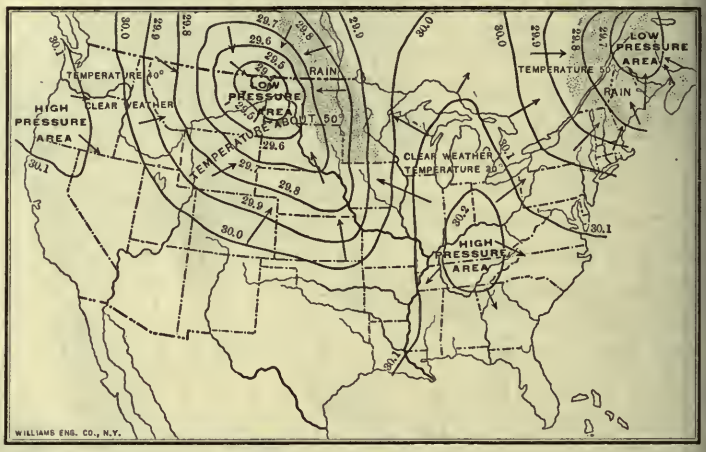


FIG. 409.—A weather map of the United States on a winter's day. The center of the storm—where the air is lightest—is the place marked *low pressure area*. The arrows show the wind blowing toward this point from all sides. The figures show the pressure of the air, as measured by an instrument called the barometer.

Thus far only the *regular* wind and rain belts have been considered. From what has been said, one might expect that the west winds, so dry after passing over the highlands of western United States, would continue eastward and cause our Central and Eastern States to be arid. As a matter of fact, we know that plenty of rain falls in this section, as shown by Figure 408. We know, too, that there are no very regular winds over this entire area; on the contrary, both winds and temperature are quite changeable. It may be warm and pleasant, with a south wind, on one day; the next day a cool, dry wind may blow from the

The irregular rains of eastern United States and Canada
(1) *Kind of weather here*

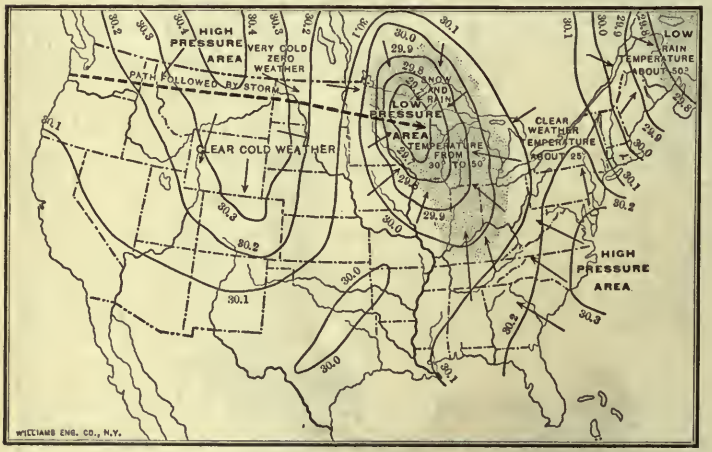


FIG. 410.—Weather map for the day following that of Figure 409. Study this map carefully, and tell how it differs from Figure 409.

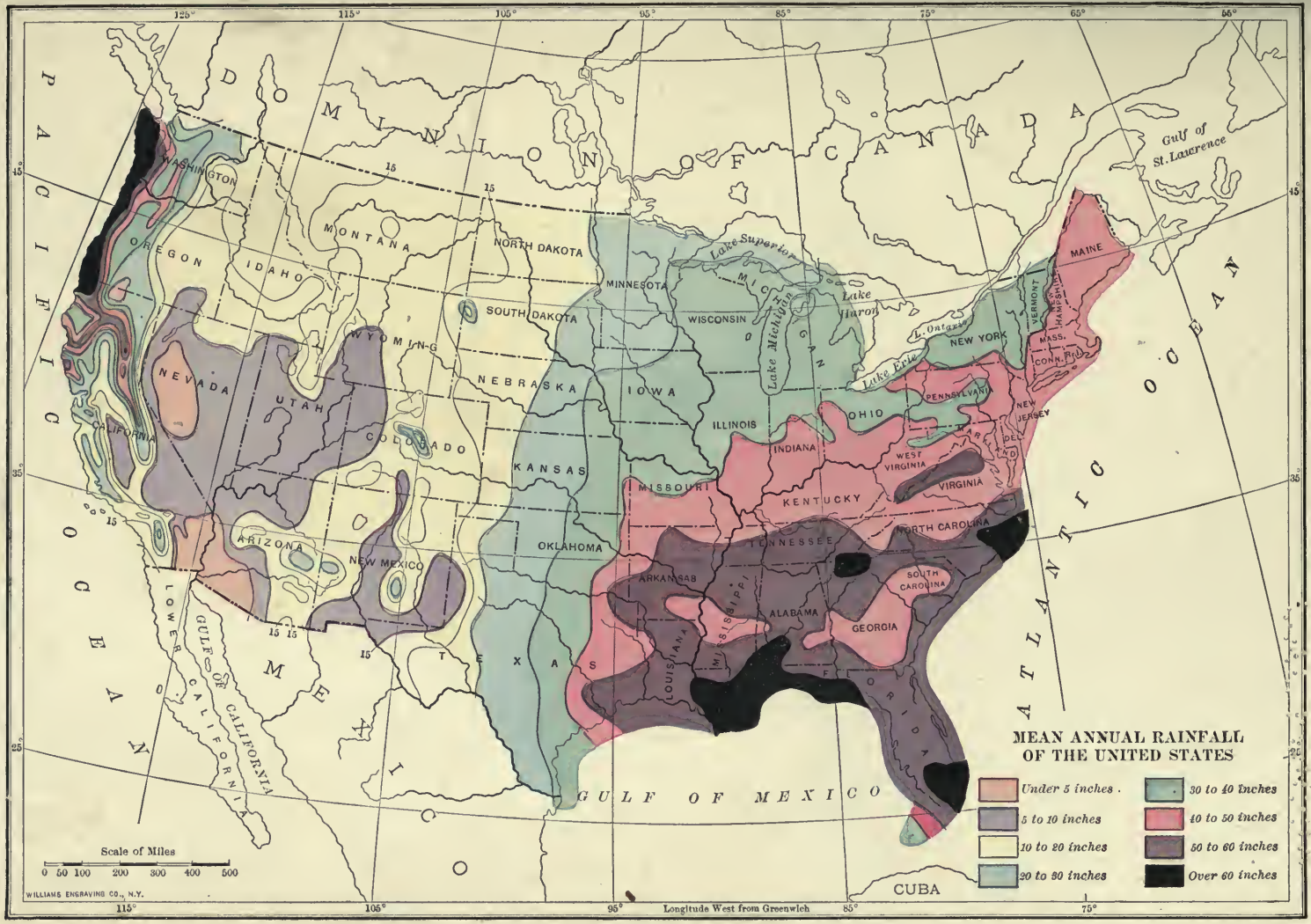

MEAN ANNUAL RAINFALL
OF THE UNITED STATES
Under 5 inches.
5 to 10 inches
10 to 20 inches
20 to 30 inches
30 to 40 inches
40 to 50 inches
50 to 60 inches
Over 60 inches
Scale of Miles
0 50 100 200 300 400 500
WILLIAMS ENGRAVING CO., N.Y.
Longitude West from Greenwich
PACIFIC OCEAN
DOMINION OF CANADA
ATLANTIC OCEAN
GULF OF MEXICO
GULF OF CALIFORNIA
Lake Superior
Lake Michigan
Lake Huron
Lake Erie
L. Ontario
Gulf of St. Lawrence
WASHINGTON
OREGON
IDAHO
MONTANA
NORTH DAKOTA
MINNESOTA
SOUTH DAKOTA
WISCONSIN
MICHIGAN
WYOMING
NEBRASKA
IOWA
NEVADA
UTAH
COLORADO
CALIFORNIA
KANSAS
ILLINOIS
INDIANA
OHIO
PENNSYLVANIA
NEW YORK
MAINE
VERMONT
NEW HAMPSHIRE
MASS.
CONN.
R.I.
NEW JERSEY
DEL.
MD.
WEST VIRGINIA
VIRGINIA
KENTUCKY
MISSOURI
OKLAHOMA
ARIZONA
NEW MEXICO
TENNESSEE
NORTH CAROLINA
SOUTH CAROLINA
ARKANSAS
ALABAMA
GEORGIA
MISSISSIPPI
LOUISIANA
TEXAS
FLORIDA
CUBA

FIG. 408.

northwest; after two or three days this may give place to a cloudy sky and rain, brought on by south or east winds; and then fair, cool weather, with northwest winds, may again set in.

(2) *The reason for such weather*

The reason for such changeable weather here is that this region is crossed by the great cyclonic storms already mentioned (p. 293). In them the winds are blowing from all sides toward the same storm. As the storm moves eastward, it carries rain farther east, and the weather begins to clear on the western side (Figs. 409 and 410).

The vapor that causes the rain in these storms is brought from the Gulf of Mexico and the Atlantic Ocean, being carried by the winds for hundreds of miles, and even into Canada.

Since the storms usually start in the west, and move eastward, it is possible

FIG. 411. — A diagram section through a cyclonic storm area. The arrows show the direction of the winds; the shaded area represents clouds and rain. The storm extends from near the Appalachian Mountains (*A*) nearly to the Mississippi River (*M*).

center — where the air is lightest — and then rising. As the air rises, the vapor condenses, forming clouds and rain (Fig. 411), as in the belt of calms.

Instead of remaining in one place, the cyclonic storms travel steadily onward, usually beginning in the northwest, and *always* passing eastward (Fig. 410). The paths followed by the storm centers generally pass over the Great Lakes, and down the St. Lawrence Valley to the ocean. They move eastward because the prevailing westerlies carry them along.

(3) *The movement of the cyclonic storms, and their extent*

These storms bring most of the rain that falls in the United States and Canada, east of the Rocky Mountains. The area of country upon which the rain may be falling from the clouds of one of the cyclonic storms is sometimes very great. (See Fig. 411.) Indeed, places fully a thousand miles apart sometimes receive rain at the same time, from the

to predict their coming, and therefore to tell in advance what changes are likely to occur in the weather. Such predictions are so important that the United States government employs a large force of men, stationed in different parts of the country, to study the weather. They telegraph their results to the central office at Washington, where a special branch of the government, called the *Weather Bureau*, has been established to have charge of this work.

(4) *Possibility of predicting these storms*

The storm predictions are telegraphed from Washington to all parts of the country, so that one knows what kind of weather to expect a full day before it comes. These predictions are usually printed in the newspapers, as you no doubt know.

Maps, called *weather maps*, also are sent out in great numbers. Figures 409 and 410 are made from such maps. From these maps you can see how the direction of the wind at any one point changes as the storm passes over the country.

By the predictions of the Weather Bureau, farmers and gardeners are warned against damaging frosts, and sailors against severe storms. Hundreds of thousands of dollars are thus saved every year. Especially valuable service has been rendered by the Weather Bureau in predicting the fierce *hurricanes* that start in the West Indies and sometimes do great damage there, as well as on our own coast (Fig. 412). These resemble the cyclonic storms, but are much more destructive. They often pass along our eastern coast; and then eastward out into the Atlantic.

(5) *Value of such warnings*

Since cyclonic storms have so great an influence on our weather, you will find it of interest to study the weather yourself. Watch the changes in wind, temperature, clouds, and rain. You might also examine the weather map and observe the weather that follows, to see how accurately the map predicts the weather.

Fig. 412. — A scene in Galveston, Texas, showing the vast destruction done by a hurricane in 1900, when many of the houses were torn to pieces during the storm.

Review Questions

1. What can you tell about the regular winds of the United States? 2. Of the earth? 3. Name the wind belts of the earth. 4. State some facts about the belt of calms. 5. Of horse latitudes. 6. In what wind belt is northern United States? 7. What is the cause of the irregular winds of eastern United States? 8. What is the relation of winds to rain? 9. Locate the regular rain belts in North America. 10. Where is there especially heavy rainfall in other parts of the earth? 11. Why is the belt of calms a rain belt? 12. State the reason for the desert regions of the earth. 13. Describe the weather in eastern United States. 14. State the reason for this kind of weather. 15. In what direction do the cyclonic storms move, and what is their extent? 16. What about the possibility of predicting these storms? 17. How is that work managed? 18. How are the warnings of value?

Suggestions

1. Estimate the number of barrels of water that falls on an acre of ground, or upon a city block, in one year, where the rainfall is forty inches. 2. Make a drawing to show the direction of the regular winds of the earth. 3. Watch the higher clouds to see in what direction they are moving. 4. Write an account of the changes in weather for five days in succession: the wind direction and force; the clouds; the rain; the temperature. 5. Read the chapter on winds and storms in Tarr's *New Physical Geography*, pp. 255–274. 6. Study Figure 408 and tell what sections have heavy rainfall.

SECTION II. OCEAN MOVEMENTS, AND DISTRIBUTION OF TEMPERATURE

1. Tides

People living upon the seacoast know that the ocean water rises for about six hours, and then slowly falls for the same period. This rising and falling of the water, twice each day, is known as the *tides*.

What the tides are

The tidal wave is only two or three feet high upon islands in the open ocean; but it rises much higher in many bays, because the space that it occupies becomes narrower near the head of a bay. In some places the tide reaches a height of forty or fifty feet.

Height of the tidal wave

The height of tide also varies from day to day; for the moon and the sun, which combine to cause it, do not always work together. At new moon, and at full moon, — when the earth, moon, and sun are nearly in a straight line, — the moon and sun pull together. They then make the tidal wave higher than at the quarter, when the sun is pulling in one direction and the moon in another. The high range of tides at full and new moon are called *spring* tides; those at the quarters, *neap* tides.

In the open ocean the tides are of little or no consequence. But along the coast, where the water rises and falls against the beaches and cliffs, they are of much importance. Where the coast is irregular, the tide is often changed to a *current*, which sometimes moves so rapidly that a sailing vessel cannot make headway against it, but must wait until the tide changes. Such a rapid current is found in one of the entrances to New York harbor, at what is known as Hell Gate, where the channel is narrow and rocky.

Effects of tides

These tidal currents move in one direction during the incoming, or *flood*, tide, and in the opposite direction during the outgoing, or *ebb*, tide. They sometimes drift vessels out of their course and place them in dangerous positions. Many a ship has been wrecked upon a coast where it was drifted by the tidal currents.

The tidal currents often carry mud and sand hither and thither, building sand bars opposite the mouths of harbors. For example, they bring large quantities of sand into the mouth of New York harbor and along the coast farther south. This is one of the reasons why the government is obliged to spend large sums of money every year in improving our harbors.

2. Ocean Currents

If you blow across the surface of a pail of water, you start a small current, or drift, of the water which moves in the direction you blow. Winds that blow over the ocean also drift the water before them. Where the winds blow steadily, as in the trade-wind belts, there is a constant drift of water, pushed along by the prevailing winds. In this way a great system of ocean currents is formed (Fig. 413), which have a great influence on the temperature of the earth.

Main cause of ocean currents

In our study of North America it was necessary several times to refer to two of these currents, the Gulf Stream and the Labrador current. We will now study the ocean currents, on each side of our continent, more fully.

In the Atlantic, where the trade winds blow, the surface water drifts slowly in the direction of these winds; that is, toward the belt of calms from both the northeast and the southeast. The water then moves

The North Atlantic eddy

westward, as a great *Equatorial Drift*, until it reaches the coast of South America, which prevents it from going farther west (Fig. 413). There the drift of water is divided, a part being turned southward, while the greater portion continues toward the northwest.

FIG. 413. — A chart showing the principal ocean currents and ocean drifts of the world.

The part that flows northwest is turned toward the right by the effect of the rotation of the earth ; and the part that flows into the South Atlantic is turned to the left, also by the effect of rotation. The northern drift keeps turning to the right, and therefore swings out into the Atlantic toward Europe. Continuing to turn, it then passes southward, and finally returns to the trade-wind belt, where it started, having made a complete circle. This circular drift of water in the North Atlantic is called the *North Atlantic Eddy* (Figs. 413 and 414).

Coming from the torrid zone, the water in this huge eddy is warm, and in it live countless millions of animals and of floating plants. Among the latter, one of the most common is a seaweed, called *Sargassum*, some of which is thrown into the middle of the great eddy. There it has collected until it now forms a *grassy*, or *Sargasso, sea*, hundreds of miles in extent. Since the Sargasso Sea lies directly between Spain and the West Indies, Columbus had to cross it on his first voyage of discovery; and his sailors, upon entering it, were much alarmed lest they might run aground, or become so entangled in the weed that they could not escape.

The Gulf Stream

A portion of the water in the North Atlantic Eddy enters the Caribbean Sea and then passes into the Gulf of Mexico. Thus a

broad, deep, gently flowing current enters these inclosed seas, which are nearly surrounded by warm, tropical lands. There the water grows even warmer than it was before.

After circling slowly round the Gulf of Mexico, the water escapes between Cuba and Florida. The current then becomes known as the *Gulf Stream* (Fig. 414), because it comes from the *Gulf* of Mexico. Being forced to pass out through so narrow an opening, it is caused to move faster, as water in a hose is made to increase its speed by passing through the nozzle. Measure the distance from Key West to Havana (Fig. 192). In this region the Gulf Stream flows as fast as four or five miles an hour.

This stream also turns to the right, soon leaving the American coast and flowing northeast toward northern Europe. On its way it grows broader and unites with the western part of the great North Atlantic Eddy. In crossing the Atlantic, this great current, or drift, is pushed along by the prevailing westerlies, so that it reaches the shores of northern Europe, and even enters the Arctic Ocean. In this part of its course the current is called the *West Wind Drift*. Some idea of its volume may be gained from the fact that it carries many times as much water as all the rivers of the world together.

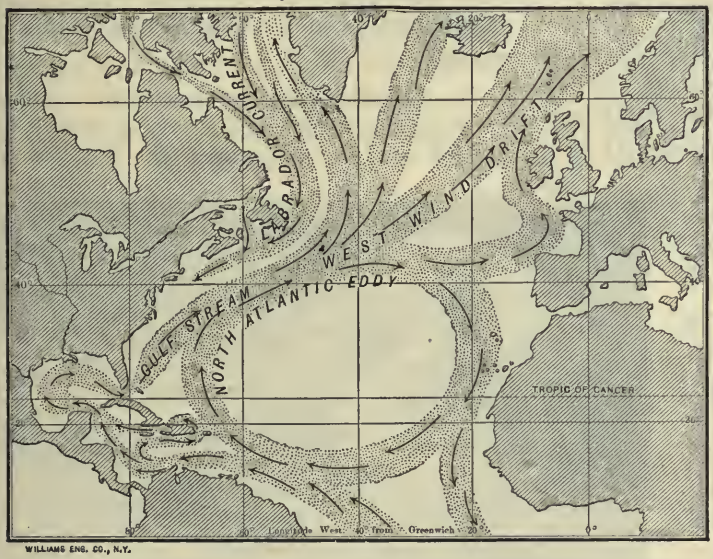


FIG. 414. — A diagram to show the currents of the North Atlantic. In order to illustrate the currents clearly, it has seemed necessary to make them as if they were sharply bounded, like a river in its channel. However, the boundaries of these great currents and drifts are so indefinite that one would not be able to detect the boundaries.

Some of the water that flows northward in this great drift returns in a cold surface current, called the *Labrador Current*. Starting from among the islands of northern North America, the Labrador Current flows past the coast of Labrador, Newfoundland, Nova Scotia, and New England as far as Cape Cod. It follows our coast very closely, keeping nearer our shore than the Gulf Stream does.

The Labrador current

Since there are two currents near together, a cold one from the north and a warm one from the south, a vessel sailing from Boston to Europe must cross both. In winter, during a storm, a ship often becomes covered with snow and ice while in the cold Labrador Current; but soon after entering the warm Gulf Stream this all melts away.

Where the cold and warm currents approach each other, dense fogs are common. The reason for this is that warm, damp winds from

the Gulf Stream are chilled in crossing the Labrador Current. This causes some of the vapor to condense and form fog. The region near the coasts of Nova Scotia and Newfoundland is one of the most foggy regions in the world, and is therefore a dangerous place for vessels.

Effects of ocean currents on North America

1. Effects of Labrador Current

The cold Labrador Current greatly influences the temperature of the neighboring land; for winds that blow over the Labrador Current are cooled, and carry the chill far inland. This is one of the reasons why the east winds of New England are so cool, and why the New England coast is such an agreeable summer resort.

The Labrador Current bears with it much ice from the Arctic region. Some of this is sea ice, or "floe ice," which has been frozen during the winter; and some of it is in the form of huge icebergs, which have broken off from the Greenland Glaciers. Seals are often seen on the floe ice, and now and then a polar bear, which preys upon the seal (Fig. 415).

Fig. 415. — A polar bear hunting seal on the floe ice that is floating southward in the Labrador Current.

Most of the sea ice melts before reaching Newfoundland; but the icebergs may be carried even farther southward before they melt. Indeed, some of them float even as far south as the paths followed by vessels which cross the Atlantic. Since many of these icebergs are larger than a large building, collision with one means shipwreck; therefore sailors need to use great caution, especially when a ship is in the fog.

Currents in the North Pacific

In the Pacific Ocean, as in the Atlantic (Fig. 413), the water is driven before the trade winds. Thus a broad drift is formed, moving westward in the belt of calms. Then a warm current swings to the right past Japan, crossing the ocean toward Alaska. This is called the *Japanese Current*. Continuing to turn to the right, this ocean drift passes southward, forming a great eddy. There is also a cold current from the north, between the Japanese Current and the coast of Asia. It resembles the Labrador Current, but is smaller and not so cold.

From what has been said, we see that the *northeastern* coasts of both North America and Asia are bathed by ocean currents from the cold north. The *northwestern* coasts of Europe and North America, on the other hand, are approached by warm drifts of water from the south.

Eddies of the southern oceans

In the South Atlantic, South Pacific, and Indian oceans, there are eddies similar to those of the North Atlantic and the North Pacific. There is one very important difference, however. In the southern hemisphere the currents are turned to the *left*, instead of the right, by the effect of rotation. Some of the water of these eddies joins the broad *West Wind Drift* of the distant southern ocean; but much of it turns northward until it once more reaches the trade-wind belt (Fig. 413).

While the winds from over the Labrador Current are chilly, those that blow from over the Gulf Stream are warm. They are also damp. During cyclonic storms, as we have seen, winds from the warm waters off our southern coast often carry both warmth and moisture far into the interior of the country. Therefore the Gulf Stream, as well as the Labrador Current, has an important effect on the climate of our Eastern and Central States.

2. Effects of the Gulf Stream

The winds that blow over the warm waters of the North Pacific cause the climate of the Alaskan coast to be far warmer than that of southern Labrador in the same latitude. These west winds also bring an abundance of vapor to the Pacific coast, all the way from California to Alaska.

3. Effects of warm currents in the North Pacific

Where these warm ocean winds blow, the winters are mild and the rain heavy; but the summers are cool, because the ocean water, though warmed, does not become greatly heated. On a globe notice that the State of Washington, with its pleasant climate, is in about the same latitude as the bleak island of Newfoundland, whose shores are bathed by the Labrador Current.

The warm West Wind Drift of the North Atlantic is of special benefit to the Old World. Notice on a map how many large cities of northern Europe are in the same latitude as desolate Labrador. How different these two regions are! One is highly civilized and densely settled; the other is occupied only by scattered, half-civilized tribes. This difference is due mainly to the fact that the prevailing west winds blow over the warm waters of the West Wind Drift.

Effects of currents in other regions

In other parts of the world, also, the ocean currents, and the winds that blow over them, have a great effect on the climate. You will learn about some of these cases when you study about foreign lands.

3. Distribution of Temperature

As a rule, the farther one travels from the equator, the colder it grows; but this is by no means always the case. In some parts of the temperate zone, for instance, it is as hot as in the torrid zone; and in some parts of the torrid zone the climate is as cool as in the temperate zone.

There are several reasons why the climate does not always grow steadily colder as one goes toward the poles. One of these reasons is the presence of highlands. It is a well-known fact that the high mountains have a cold climate, even though in the torrid zone. For the same reason high plateaus may be colder than lowlands even far to the north of them.

Why places in the same latitude may have different temperatures

A second reason is that land becomes warm or cool much more rapidly than water. Land becomes hotter than the ocean in summer, and colder in winter. Thus, in northern Minnesota, far from the ocean, the average temperature in January is below zero; but in July it is about 65° (Figs. 416 and 417). In New York City, on the seacoast, the average in January is about 25° and in July not quite 75°. Thus the difference between the summer and winter months in northern Minnesota is more than 65°; but in New York City it is not over 50°.

The winds are a third cause of differences in temperature. When the prevailing winds are from the ocean, they cause an even, or *equable*, climate, as in California, Oregon, and Washington. Where they blow from the land, on the other hand, they are cool or cold in winter, and warm or hot in summer.

A fourth cause for difference in temperature is the ocean currents, as you have just seen. Give several examples of their influence.

FIG. 416.—Isothermal chart of the United States for January. Why is it colder in the interior than on the east coast? Why so warm on the west coast? Can you notice any influence of mountains?

If, therefore, we wish to draw a line across North America, to connect several points that have the same average temperature for a month, it would need to be a very irregular one. Some parts would reach much farther north than others. Such lines tell so much about temperature, in so little space, that it is customary to make maps to show them, as in Figures 416 and 417. Since these lines connect the places that have the same temperature, they are called *isothermal lines*, or *isotherms* (*iso* means equal; *therm*, heat). A map or *chart*, showing the isotherms, is called an *isothermal chart* (Figs. 416 and 417).

Meaning of isothermal lines, and their value

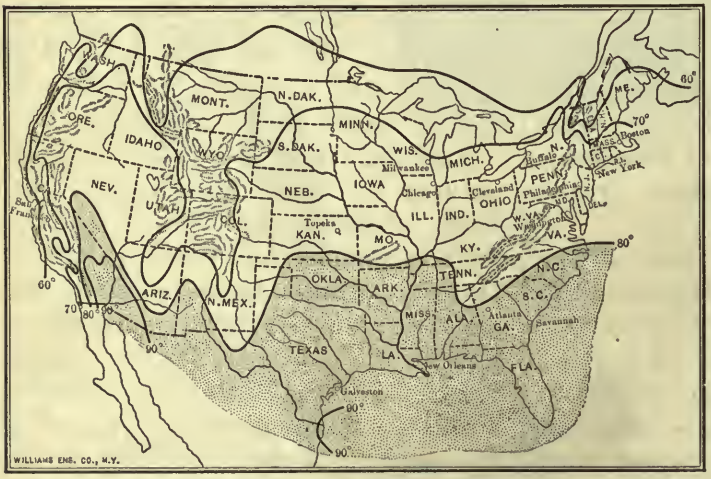


FIG. 417.—Isothermal chart of the United States for July. Why is it cooler on the west coast than on the east coast?

Trace several of the isotherms across the United States and explain why they bend as they do. You will notice that the isotherms on the western coast extend north and south, almost parallel to the coast. This is because the winds reach the coast after passing over the warm Pacific Ocean.

Differences between January and July isotherms on land, with reasons

There is only about 20° difference between the winter and summer temperatures on the western coast; but on the eastern coast of the United States the difference between summer and winter is much greater. Here, in the East,

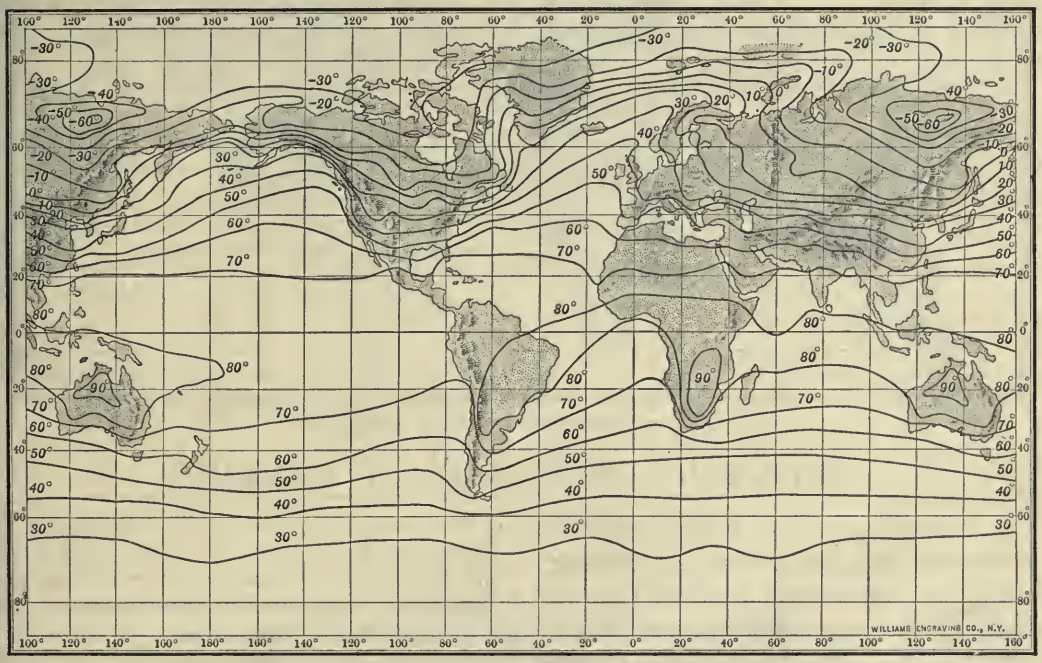


FIG. 418. — An isothermal chart of the world for January.

some of the winds are from the ocean; but still more are from the land, which is cold in winter and warm in summer.

Figures 418 and 419 show similar isotherms for the whole world. Observe how these bend where they cross high mountain chains. You will notice that the winter isotherms of the north temperate zone bend toward the equator over the continents. This is because the land is colder than the ocean. During the summer, on the contrary, the isotherms curve away from the equator in crossing the continents. On what continent are these bends best seen? Why? What effect of the West Wind Drift do you find in Figure 418?

1. What are the tides? 2. Give some facts about their height. 3. About their effect. 4. Explain the main cause of ocean currents. 5. Describe the North Atlantic Eddy. 6. The Gulf Stream. 7. The Labrador Current. 8. How does the Labrador Current cause fogs? 9. Describe the currents of the North Pacific. 10. The eddies of the southern oceans. 11. Explain the effects of the Labrador Current on the climate of North America. 12. What are the effects of the Gulf Stream? 13. The warm currents in the North Pacific? 14. State the effects of ocean currents on western Europe. 15. Give four reasons why places in the same latitude may have different temperatures. 16. What are isothermal lines and what is their value? 17. What are isothermal charts? 18. Trace some of the isothermal lines across the United States for January and for July, and explain their differences.

Review Questions

1. If your home is upon the seacoast, find out something about tides there. 2. What course might a vessel take in order to be carried from Europe to America, and back again, by ocean currents? 3. How do vessels try to avoid running into one another in dense fogs?

Suggestions

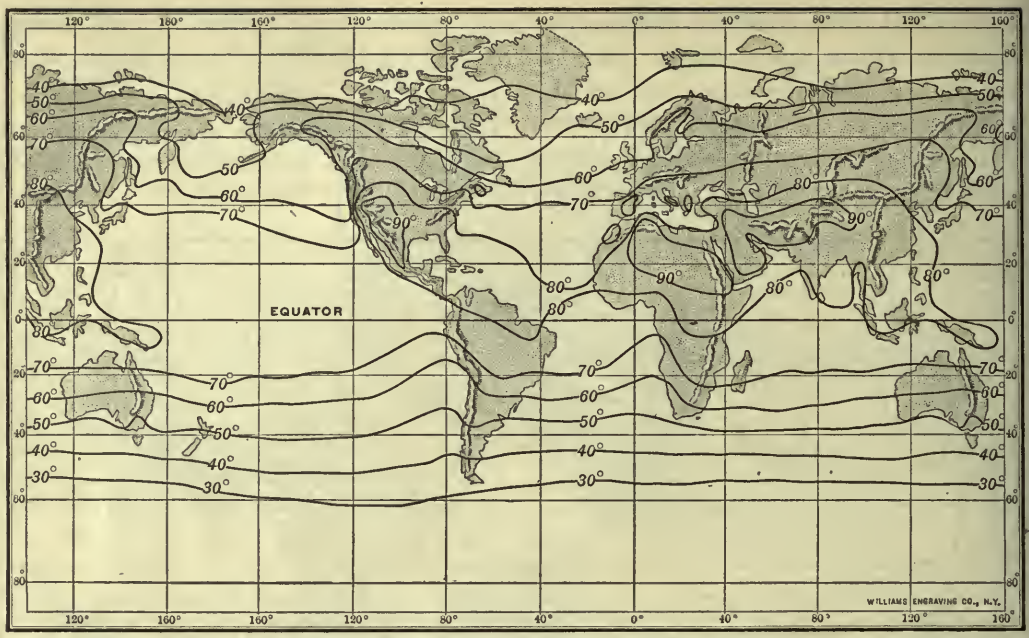


FIG. 419. — An isothermal chart of the world for July.

SECTION III. THE RACES OF MANKIND

In some countries the people are white; in others, they are yellow, or black, or brown, or red. There are many different races of men, but they may all be included in four great groups. These are (1) the *white*, or *Caucasian* people; (2) the *black*, or *Ethiopian* races; (3) the *yellow*, or *Mongolian* people; (4) the *red men*, or *American Indians*. These groups comprise about one and one half billion people.

The principal divisions of mankind

About one hundred and seventy-five millions of the inhabitants of the earth are negroes (Figs. 420 and 421), or *Ethiopians*. This is often called the *black race*. There are many divisions of this group, but they all have a deep brown or black skin; short black, woolly hair; broad, flat noses; and prominent cheek bones.

1. Ethiopians

The original home of the Ethiopians is Africa, south of the Sahara Desert (Fig. 420); but many have been carried to other lands as slaves, and have there mingled more or less with other races. The negroes in Africa are still either savages or barbarians of low type; but in many other lands they have advanced to a civilized state.

A second great division of the human race is that of the *American Indians*, often called the *red race*. It is the smallest of the four groups, and includes only about twenty-two millions. These people resemble the Mongolians in some respects. They were in possession of both North and South America when Columbus discovered the New World, and many of them still live on these continents (Fig. 420). The Indians have a copper-colored skin, prominent cheek bones, black eyes, and long, coarse, black hair (Figs. 423, 424).

2. American Indians

FIG. 420.

The third division, the *Mongolian*, or *yellow race*, numbers about five hundred and forty million. They live mainly in Asia, though some, as the Finns, Lapps, and Turks, have migrated to Europe (Fig. 420).

3. Mongolians

The Chinese and Japanese (Fig. 422) are the best examples of Mongolians. They have a yellowish, or in some cases even a white, skin, prominent cheek bones, small slanting eyes, a small nose, and long, coarse, black hair. The Malays, who live in southern Asia, and in the islands of the Pacific and Indian oceans, are a division of the yellow race. Most of the Mongolians are highly civilized, although their kind of civilization is different from that of the white race.

The largest and most highly civilized of the four divisions of mankind is the *white*, or *Caucasian race*, which numbers about seven hundred and seventy millions. They are also the most widely scattered over the earth. Their original home is not known, but now they are found in great numbers in all the continents (Fig. 420).

4. Caucasians

There are two main branches of the Caucasian race: (1) the fair type, with light skin, light brown, flaxen, or red hair, and blue or gray eyes; (2) the dark type, with fair skin, dark brown or black hair, often wavy or curly, and black eyes.

Extent to which the Caucasians are leaders, with reasons

The leaders among these four great divisions are the whites. They have learned the use of ships in exploring distant lands, and have spread with great rapidity. They have con-

quered the weaker peoples and have taken their lands from them, so that they now rule nearly the whole world (Fig. 420). The only race that has held out against them is the Mongolian.

FIG. 421. — A Zulu, one of the tribes of African negroes.

Review Questions

1. Name the four divisions of mankind. 2. Tell what you can about the Ethiopians. 3. Do the same for the American Indians. 4. Mongolians. 5. Caucasians. 6. To what extent are the Caucasians leaders among these races? Give reasons.

Suggestions

1. How many of the four divisions of mankind are represented in your own neighborhood? 2. Collect pictures for the school, showing the kinds of dress worn by the different races of mankind. 3. Collect pictures of the houses in which such people live.

FIG. 422. — Japanese women, belonging to the Mongolian, or yellow race.

Photograph from Bureau of Ethnology

FIG. 424. — A North American Indian, one of the red race.

FIG. 423. — An Indian Chief.


SOUTH AMERICA
Scale of Miles
0 200 400 600 800 1000
Cities with over 500,000 Rio de Janeiro
Cities with 200,000 to 500,000 Santiago
Cities with 100,000 to 200,000 Valparaiso
Smaller Places Santa Cruz
Capitals with less than 100,000 ASUNCION
Capitals ⊙ Other Places o
CARIBBEAN SEA
LESSER ANTILLES
MARTINIQUE (FR.)
SANTA LUCIA (BR.)
BARBADOS (BR.)
CENTRAL AMERICA
Pt.Gallinas
Port of Spain
TRINIDAD (BR.)
Orinoco Delta
VENEZUELA
LLANOS
COLOMBIA
Bogota
GEORGETOWN
New Amsterdam
PARAMARIBO
St.Laurent
CAYENNE
BRITISH
DUTCH
FRENCH
GUIANA
MARACA I.
Mouths of the Amazon R.
EQUATOR
QUITO
Chimborazo
ECUADOR
Gulf of Guayaquil
Esmeraldas
Buenaventura
MAPELO I.
Paita
Chiclayo
Trujillo
Chimbote
Huaraz
PERU
Lima
Callao
Cuzco
Mollendo
Arica
Iquique
BOLIVIA
LA PAZ
Mt. Sorata
Mt.Illimani
Cochabamba
Santa Cruz
Sucre
Potosi
Tarija
Trinidad
Riberalta
BRAZIL
Manaos
Obidos
Santarem
Para (Belem)
Maranhao (S.Luis)
Granja
Ceara
Cape San Roque
Natal
Parahiba
Pernambuco (Recife)
Alagoas
Bahia
Porto Seguero
Caravellas
Diamantina
Victoria
Ouro Preto
Campos
Petropolis
Cape Frio
Rio de Janeiro
Sao Paulo
Santos
Paranagua
Curitiba
Blumenau
Itaiahy
Desterro
S.CATHARINA I.
Porto Alegre
Pelotas
Rio Grande do Sul
Matto Grosso
Cuyaba
Plateau of Matto Grosso
Goyaz
Amazon R.
TROPIC OF CAPRICORN
Antofagasta
PARAGUAY
ASUNCION
Concepcion
Villa Rica
Villa Pilar
URUGUAY
Montevideo
Colonia
Chuy
Plata R.
C. San Antonio
C. Corrientes
ARGENTINA
Salta
Tucuman
Corrientes
Santiago del Estero
Rioja
San Juan
Cordoba
Santa Fe
Parana
Mendoza
Rosario
Buenos Aires
La Plata
Bahia Blanca
Blanca Bay
S. Matias Gulf
Puerto Madrin
Rawson
C. of Two Bays
Gulf of St. George
C. Tres Puntas
Santa Cruz
PATAGONIA
ST.FELIX
ST.AMBROSE (TO CHILE)
Copiapo
Serena
Mt.Aconcagua
Valparaiso
Santiago
Talca
Concepcion
Valdivia
Osorno
Castro
CHILOE I.
CHONOS ARCHIPELAGO
Gulf of Penas
CAMPANA I.
WELLINGTON I.
HANOVER I.
QUEEN ADELAIDE ARCH.
Strait of Magellan
DESOLATION I.
SANTA INEZ I.
CLARENCE
HOSTE I.
Cape Horn
TIERRA DEL FUEGO
STATEN I.
JUAN FERNANDES IS. (TO CHILE)
MAS A FUERA I.
MAS A TIERRA I.
FALKLAND ISLANDS (TO GREAT BRITAIN)
WEST I.
EAST I.
Port Stanley
SOUTH GEORGIA (BR.)
SANDWICH IS.
PACIFIC OCEAN
ATLANTIC OCEAN
ANDES MTS.
Longitude West from Greenwich
WILLIAMS ENGRAVING CO., N.Y.

FIG. 425.

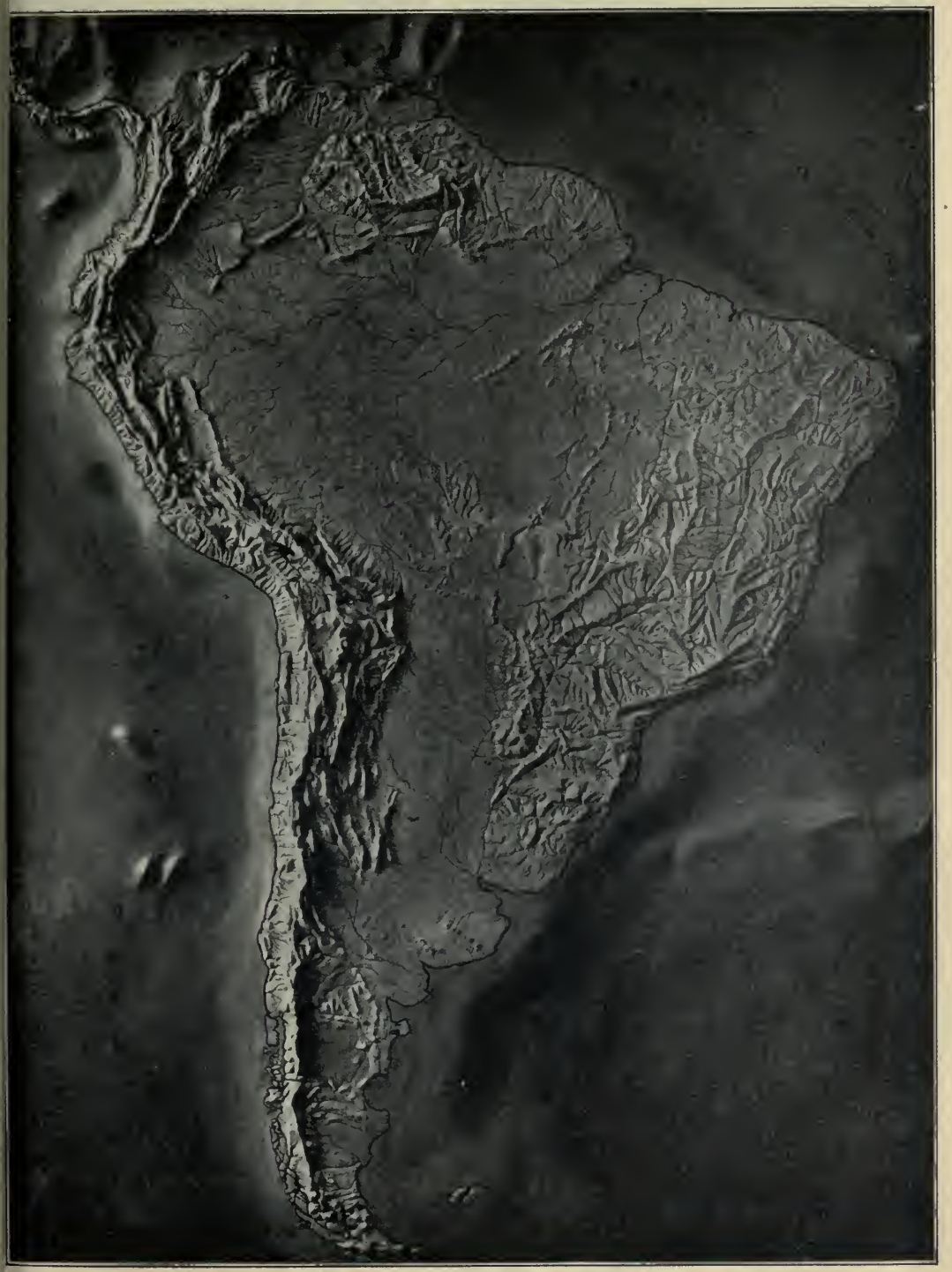


FIG. 426. — Relief map of South America.

PART V. SOUTH AMERICA

Map study

1. Compare South America with North America in shape. 2. What great mountain range extends along the western side? 3. Name the countries of South America. 4. Which one is largest? 5. Which is second in size? 6. What is the coldest part of South America? 7. Which part of the continent lies in the tropical zone? 8. Which part has a climate very much like our own? 9. When does Argentina have winter (p. 92)? 10. Name the three principal rivers. Locate each. 11. Locate Cape Horn, Cape San Roque, and Strait of Magellan.

SECTION I. GENERAL FACTS

South America is nearly as large as North America, and has been known quite as long; for it was discovered by Columbus on his third voyage. On the map, find the country named after him. Yet South America has only about one third as many inhabitants as North America.

Area and population

There was no way of knowing, at first, which of the two continents in the New World would be settled the more rapidly. Yet there are several reasons why South America might have been expected to develop as rapidly as North America.

Why more rapid settlement might have been expected

FIG. 428. — Find extensive regions where there are very few inhabitants. In what parts is settlement fairly dense?

One reason is that the two continents are similar in several important respects. (1) They have the same general shape. (2) Each has its highest mountains on the western side. Find the three great mountainous regions, or highlands, of South America. Locate them on Figure 425. What highlands in North America correspond to these? (3) Each has broad, fertile plains. The *pampas* and *llanos* are treeless plains suited to grazing; but the

1. Resemblance to North America


PHYSICAL MAP OF
SOUTH AMERICA
Scale of Miles
0 200 400 600 800 1000
KEY
Over 6,500 ft.
From 1,650 to 6,500 ft.
From 650 to 1,650 ft.
Sea Level
From 0 to 650 ft.
From 0 to 6,500 ft.
From 6,500 to 13,000 ft.
Below 13,000 ft.
CARIBBEAN SEA
MARTINIQUE
BARBADOS
LESSER ANTILLES
CURACAO
TRINIDAD
Pt. Gallinas
Lake Maracaibo
Gulf of Darien
ISTHMUS OF PANAMA
Gulf of Panama
Vol. Tolima
Magdalena R.
Guaviare R.
Orinoco River
GUIANA HIGHLANDS
SIERRA PACARAIMA
TUMAC-HUMAC MTS.
Mouth of the Amazon River
EQUATOR
Rio Negro
Yapura R.
LLANOS
Napo R.
Amazon R.
Vol. Chimborazo
Gulf of Guayaquil
C. Blanco
Parina Pt.
Maranon R.
SELVAS
Ucayali R.
Jurua R.
Purus R.
Madeira R.
Tapajos R.
Xingu R.
Tocantins R.
MARAJO
C. S. Roque
C. Branco
Guapore R.
Mamore R.
Mt. Sorata
Lake Titicaca
Mt. Illimani
Sahama Vol.
PLATEAU OF BOLIVIA
PLATEAU OF MATTO GROSSO
SERRA DO ESPINHACO
SERRA DOS AMORES
SERRA DA MANTIQUEIRA
SERRA DO MAR
C. Frio
Pilcomayo R.
Paraguay R.
Parana R.
EL GRAN CHACO
TROPIC OF CAPRICORN
Atacama Vol.
ST. FELIX I.
ST. AMBROSE I.
Coplapo Vol.
Salado R.
SALINAS
SERRA GERAL
Mt. Aconcagua
MAS A FUERA I.
JUAN FERNANDEZ I.
Uruguay R.
Plata R.
Colorado R.
PAMPAS
Rio Negro R.
Blanca Bay
San Matias Gulf
CHILOE I.
CHONOS ARCHIPELAGO
Gulf of St. George
PATAGONIA
WELLINGTON ISLANDS
FALKLAND IS.
Strait of Magellan
TIERRA DEL FUEGO
Cape Horn
WILLIAMS ENGRAVING CO., N.Y.
Longitude from Greenwich
80° 70° 60° 50° 40° 30° 20°
90° West

FIG. 427.

Fig. 429. — A view in the lofty Andes Mountains of Chile. Here the surface is very rough and rocky, and snow remains all the year round.

selvas of the Amazon Valley are a region of dense forests. Find their names on Figure 427. (4) In each there are large, navigable rivers reaching into the very heart of the continent. Name the three principal rivers of South America and trace their courses.

2. Advantages over North America

In some respects South America has important advantages over North America. No part extends into the frigid zone; but a large part of Canada, the largest country in North America, is so cold that no crops can be raised there.

Second, the damp winds, which blow mainly from the Atlantic, bring plenty of rain to most of South America (Fig. 430). A narrow strip on the western side of the Andes Mountains, and a part of Argentina, where west winds blow, are the only arid and desert sections. Locate these deserts on Figure 430. This is very different from North America, where, as you remember, a large portion of the West is arid.

In addition, large quantities of gold and silver were discovered in South America much earlier than in North America. Adventurers in search of the precious metals thronged into South America hundreds of years before the rush for California gold took place. That gave an early start to immigration.

Fig. 430.—A figure showing rainfall in South America. In what parts is there heavy rainfall? In what parts are there deserts? Is the rainfall heavy or light on the coasts against which the winds blow? What about the rainfall in the belt of calms?

In spite of these facts, the settlement of South America has been very slow, compared with that of North America.

Why settlement has not been rapid

1. Because of the climate

One of the most important reasons is the climate. While no part of the con-

tinent lies in the very cold belt, much more than half of it is in the torrid zone (Fig. 116). Note where the equator and the Tropic of Capricorn cross the continent. What does the latter line tell you (p. 91)? Where must the Tropic of Cancer be?

Although vegetation thrives in the torrid zone, it is not a good region for men to live in. The dampness and heat make it difficult to work, and even cause serious sickness. There is, however, little need for work, for it is easy to get food, clothing, and shelter where vegetation is so abundant. This tends to make men lazy. Such a climate is certainly not attractive, especially to people from countries, such as those of Europe, which have a temperate climate; yet European countries are the ones from which immigrants would have come.

The most prosperous countries in the world are in the temperate zone, but only the smaller part of South America lies in that zone, as you can see (Fig. 116). What countries are included in it? Most of the people of South America live either in these countries or else on the plateaus and mountain slopes, which, as you know, have a cool climate, even though in the tropical zone.

A second reason for the slow settlement of South America is the lack of coal.

2. Because of the lack of coal

Some coal is found there, it is true, but very little is mined. The importance of coal for manufacturing has already been seen in our study of the United States. Without that mineral our country could not have developed so many industries, nor have attracted such great numbers of settlers.

Most of the coast of South America is very straight, so that there are few bays and harbors. Compare North and South America in this respect. The western coast is especially straight, and for long distances there are no harbors at all. Moreover, the lofty Andes rise, like a great wall, almost out of the ocean, so that it is very difficult to carry goods from the western seacoast to the interior (Fig. 429).

3. Because of the lack of harbors

The scarcity of good harbors, as well as the lack of coal, is unfavorable to manufacturing and commerce. Yet these are two occupations that attract and support large numbers of people.

A fourth reason for the small population of South America is the character of the people living there. The whole continent was once owned by Spain and Portugal, and the languages of these countries are still spoken there, Portuguese being used only in Brazil. Like Mexico and Central America, the South American countries rebelled, and now all but the Guianas are independent republics.

4. Because of the kind of people there

Some of the people are Spanish or Portuguese, but far more are negroes, Indians, and half-breeds. More than half of all the South American people can neither read nor write. In some of the countries, too, the people have been very quarrelsome, and have spent much of their time in fighting, instead of developing industries. Because ignorance has been so general, and revolutions so numerous, Europeans have not been attracted to South America as they have to North America. Of late, however, there has been great improvement, and some of the countries have developed rapidly.

FIG. 431. — Some of the South American animals.

FIG. 432. — The South American llama.

Plant and animal life

1. Plant life

In the warm, rainy belt the climate is so hot and damp that there is luxuriant plant life (Fig. 439). The vast jungles of the Amazon are so dense that travel through them is very difficult. In fact, immense areas have never yet been explored. In the desert of the west coast, on the other hand, plant life is very scanty (Fig. 446). There are some parts — for instance, the Desert of Atacama in northern Chile — where there is almost no life of any kind.

FIG. 433. — Savage Indians who live in the tropical forest of eastern Peru, east of the Andes.

In the south temperate zone, and on the cooler mountain slopes of the torrid zone, the land is forest-covered; but these forests are much more open than the tropical jungle. The extreme southern part of the continent has a climate so cold that the plants become dwarfed, as in northern Canada.

2. Animal life

(1) *In the jungle*

In the tropical forest are many insects and beautiful birds. Among the larger animals are the fruit-eating monkey, the fierce jaguar (Fig. 431), which preys upon other animals; and the sloth (Fig. 431), a creature that sleeps hanging, back downward, from the branches of the trees. There are also many reptiles, including serpents and the iguana, a tree lizard that grows to a length of several feet. Some of the serpents are small and poisonous; others, like the boa constrictor (Fig. 431), are large, and powerful enough to crush a deer in their coils.

The many beautiful butterflies and the ants are especially interesting. The ants live in colonies, and build houses of earth. There are animals that live on the white ants, one of the most peculiar being the ant-eater (Fig. 431). With its long claws it digs the ants from their earthy or woody dwelling places, using its sharp-pointed snout and long tongue in finding its food.

The tapir (Fig. 431), an animal five or six feet long, wanders about at night, feeding along

the water courses. The armadillo (Fig. 431), a burrowing animal covered with an armor, rolls itself into a ball when attacked by an enemy, thus protecting its soft under parts. In the river waters and swamps are fishes, turtles, and alligators (Fig. 431). The fish and the turtle eggs are among the chief foods of the forest Indians. The manatee (Fig. 431), or sea cow, lives in both fresh and salt water, and goes up the Amazon even as far as Ecuador.

Fig. 434. — An Inca Indian of Peru.

On the grassy plains herds of deer roam about, and also the rhea (Fig. 431), — often called the American ostrich, — one of the few large running birds. It lives on the open pampas, as in Patagonia, where herds of guanaco, a kind of wild llama, also are found.

(2) *On the plains and among the mountains*

Among the crags and peaks of the Andes dwells the condor (Fig. 431), the largest of flying birds, — so large that it kills and carries off small deer. In the mountain valleys live the llama (Figs. 431, 432, 443) and the alpaca. Like other mountain animals, the llama is so sure-footed on the rocks that it is of great use as a beast of burden; and the cold climate causes it to have a thick coat of wool which is of value to man. Because of its usefulness the llama is sometimes called the American camel, but it is much smaller than a true camel.

When South America was discovered by Columbus, it was inhabited only by red men. Many of these were savages; and even today some of the forest Indians are savages (Fig. 433) living almost solely upon fish, game, and the abundant fruits. It is unsafe for white men to go among some of them, and indeed there are forest tribes that are still cannibals.

The native inhabitants

Among the Andes, especially in Peru, Bolivia, and Ecuador, the Spanish explorers found tribes of Indians, called *Incas* (Fig. 434), who were far more advanced than their neighbors.

The Incas tilled the soil by the aid of irrigation, cultivating the potato, corn, and Peruvian cotton, all of which they had improved from wild plants. They had the llama and alpaca as domestic animals, obtaining wool from them and using them as work animals. They organized armies, built roads (Fig. 435), and had a rude postal and express system by swift runners. Although they had not invented writing, they kept records by means of knotted strings. Their empire extended for more than two thousand miles along the Andes, and from the Pacific coast to the trackless forests of the Amazon; and they were governed by a powerful chief whose capital was Cuzco in Peru.

Fig. 435. — A stone bridge in Bolivia, built by the Incas before South America was discovered by white men.

SECTION II. ARGENTINA, URUGUAY, AND PARAGUAY

From what has been said you can, perhaps, pick out the most progressive countries of South America. They lie in the temperate zone.

Argentina is the leading country, and the one that most resembles our own. It is only about one third as large as the United States, but it has the same variety of climate from east to west. There is plenty of rain in the northeast, while in the interior there are broad stretches of arid plains. From north to south there is a great difference in temperature, even greater than in our country. As in the United States, much of Argentina consists of plains, with lofty mountains in the west. Like our own country, also, Argentina has a good government, abundant resources, and progressive people.

Comparison of Argentina with United States

Argentina is one of the greatest wheat-producing countries of the world; other grains are common. Much fruit also is grown, especially grapes, from which wine and raisins are made. In the north the climate is so warm that tobacco, sugar cane, cotton, and tropical fruits are raised. The extreme south is too cold for farming; but sheep raising is carried on even in Patagonia and on the stormy islands beyond the Straits of Magellan.

Agriculture

On the treeless plains of the interior, called *pampas* (Fig. 436), there is excellent grass, and one of the chief industries there is the raising of cattle and sheep. This reminds us of the arid parts of western United States. Argentina is also one of the leading cattle and sheep countries of the world, having many millions of sheep.

There are extensive forests in the north, and in the mountains. There is therefore some lumbering. Argentina is not an important mining region, though some gold, silver, iron, coal, and petroleum are found.

Lumbering and mining

Fig. 436. — A view on a cattle ranch in the pampas of Argentina.

In the large cities there is much manufacturing, chiefly of the raw products raised in the country. The leading kinds are dairying and the manufacture of wool, flour, sugar, wine, leather, and cotton. A large part of the raw products, however, is sent abroad, especially wool, hides, wheat, corn, and meat. Machinery and many other manufactured articles are imported.

Manufacturing and commerce

In a country so progressive as this, there must be means of ready transportation. The broad Parana River, which empties into the Plata Estuary, forms an important water way to the interior; and railways cross the well-settled portions of the country, connecting all the important cities. In fact, there are more railways in Argentina than in any other South American country. There is now a railway from Buenos Aires, westward across the Andes to Valparaiso.

FIG. 437.—A ranch house on a cattle ranch in Uruguay.

Paraguay and Uruguay have nearly the same products as Argentina. Name these products. Both countries are especially noted for their cattle and sheep. Among the principal exports are products obtained from the cattle and sheep, such as dried beef, corned beef, hides, tallow, and wool. Paraguay is one of the two countries of South America without a seacoast. Name the other. It has a much warmer climate than Uruguay, and therefore has a number of tropical products including rubber, dyewoods, and valuable timber from the forests. Another product is *yerba-mate*, or *Paraguay tea*, which is quite different from our tea. It is much used in South America, where its value was learned from the red men.

Paraguay and Uruguay

BUENOS AIRES, the capital of Argentina at the mouth of the Plata River, is the largest city in South America, having more than a million inhabitants. MONTEVIDEO, the capital of Uruguay, is larger than Montreal.

Principal cities

Both of these cities are important seaports, exporting the products of the region to Europe and North America. Buenos Aires is a busy, modern city, with many fine buildings, quite like some of our best cities. It has much manufacturing as well as commerce.

Locate ASUNCION, the capital of Paraguay. Also LA PLATA, CORDOBA, and ROSARIO, which are among the leading cities of Argentina.

SECTION III. BRAZIL

Brazil is the one country in South America that formerly belonged to Portugal, and the Portuguese language is still spoken there.

It is a much larger country than Argentina, or any other country of South America, and is even larger than the United States. Yet it has less than one fourth as many inhabitants as our country, and of these, less than one half are white men.

Area and population

Eastern Brazil is a highland region;

but the northern third of the country is mainly a vast level plain, drained by the Amazon River. The rainfall in the Amazon Valley is so heavy, and the slope of the land so gentle, that the river and its larger tributaries are swollen to great breadth. At times of flood these rivers overflow the surrounding country and change it to an immense swamp crossed by many channels. In some places the Amazon is several miles wide, and resembles a lake rather than a river.

The Amazon Valley

The Amazon is navigable for steamboats nearly to the base of the Andes, a distance of twenty-two hundred miles from the seacoast. Some of the tributaries also are navigable. Along this water way there are a few small settlements, such as MAÑAOS, which are reached by ocean steamers; but away from the river there is nothing but an almost unknown wilderness. There is not a single large city in this entire valley. How different it is from the valley of the Mississippi!

Ratzel's *History of Mankind.*

FIG. 438. — Savage Indians that live in the interior of Brazil, far away from the region where white men live.

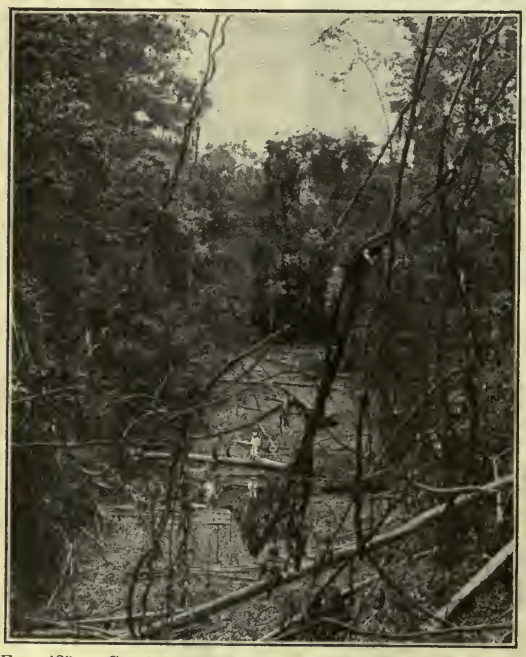


FIG. 439. — Cutting a road in the dense tropical forest of the Amazon Valley. Notice the wavy vines hanging from the trees.

A large part of Brazil, including much of the valley of the Amazon and its tributaries, is covered with dense tropical forests. The trees and undergrowth are so dense that one cannot pass through them without first cutting a path (Fig. 439).

The tropical forest

1. Its appearance

In these woods an occasional giant tree reaches to a height of from one hundred and fifty to two hundred feet. The lower limbs may be as much as a hundred feet from the ground. Between these giant trees are smaller ones struggling to rise out of the somber shade into the sunlight. There are also many shrubs, bushes, ferns, and vines, the latter twining about the tree trunks or hanging from their lower limbs (Fig. 439).

The woods present much the same appearance throughout the year. There is no time

hen all the trees send forth their leaves and lossoms; nor is there a time when all the eaves change color and fall to the ground. ome of the trees blossom throughout the ear; others have their blossoms at regular easons; thus flowers and fruits may be seen t all times of the year.

Some of the trees of the forest produce fruits and nuts, others valuable timber or dyewoods. In fact, the word *Brazil* comes from the name of a dyewood found in the Amazon forests. Another valuable plant is the vanilla, whose beans are used in making perfumes and flavoring extracts. Many of the Indians near the rivers make long journeys into the forest to collect the products, both for their own use and to ship down the Amazon.

. Its products
(1) *Fruits, nuts, dyewoods, and vanilla*

The Indians still cultivate the *mandioca*, which was one of their principal foods when white men appeared. The root of this plant is somewhat like a long sweet potato, and it is made into a meal, called *farina*. Mandioca is used by the people much as wheat is by those who live in temperate climates. It is from this plant that tapioca is made. Paraguay tea is also obtained in the Brazilian forest, and Brazil produces far more of this than Paraguay.

(2) *Mandioca and tea*

The natives are also engaged in obtaining *rubber*, a product of great value because of its many uses. When gathering rubber, the natives camp in the forests in lightly built huts, from which paths lead through the dense undergrowth to the rubber trees. Holes are made in the trees, so that the sap oozes forth, when it is collected in bamboo dishes. It is then smoked and dried before being shipped down the river to PARA. Find this city on the map (Fig. 425).

(3) *Rubber*

Besides the rubber trees in the forest, there are many rubber plantations in which the rubber tree is carefully planted and cultivated. Rubber ranks second among the exports from Brazil, and one of the principal markets for it is the United States. What are some of its important uses? Why should the invention of bicycles and automobiles have an important influence on the production and value of rubber?

Most of the inhabitants of Brazil live in the eastern and southern parts. Much of this section is a plateau, crossed by low mountains. Because of the elevation the temperature is much more agreeable than in the Amazon Valley; and, as you will see from the map, the very southern portion lies in the temperate zone.

The more settled part and its products

The chief industry is farming and the raising of cattle. Besides grain, the crops of the warm temperate and tropical climates thrive. Among these are tropical fruits, cotton, corn, sugar cane, tobacco, cocoa, and coffee. The last is the most important and much is sent to the United States.

1. Agriculture

The coffee tree is a native of Abyssinia in Africa. It was introduced into Brazil long ago, and has proved so valuable that Brazil now produces more than one half of all the coffee used in the world. It is cultivated all the way from southern Brazil to the Amazon, and there are fully five hundred million coffee trees in the country. They grow best at elevations of from fifteen hundred to forty-five hundred feet above sea level, and are very common on the highlands of eastern Brazil. Each tree produces from thirty to forty pounds of coffee a year. Between April and September the berries are picked, dried in the sun, and hulled. After being sorted, the coffee is shipped in bags.

Valuable minerals, including gold, diamonds, and some coal and iron, are found in the plateau region of Brazil. Indeed, this is one of the principal diamond-producing countries in the world.

2. Mining and manufacturing

Manufacturing has begun to be important. Cotton manufacturing is rapidly increasing, and there are, also, woolen mills, flour mills, and other manufacturing plants, chiefly in southern Brazil. Why should this be the most progressive part of the country?

FIG. 440. — A view of the city and harbor of Rio de Janeiro.

The chief cities are on the coast, by far the largest being RIO DE JANEIRO, the capital (Fig. 440). It is the second city in size in South America. Which is the first? It has a splendid harbor, and is a very busy seaport. A rich farming country surrounds it, dotted with coffee plantations.

Centers of commerce

BAHIA and PERNAMBUCO, farther north on the coast, are second and third in size. The fourth is SAO PAULO, which lies to the southwest, back from the coast. SANTOS is its seaport, noted for its export of coffee.

SECTION IV. THE GUIANAS AND VENEZUELA

North of Brazil are three small countries, the only portions of the South American continent now under control of European nations. One belongs to Great Britain, one to Holland, and one to France. They are known as *British Guiana*, *Dutch Guiana*, or *Surinam*, and *French Guiana*. Find the capital of each.

The Guianas

In these countries a large part of the surface is still a forest wilderness, inhabited chiefly by Indians. This tropical forest, like that of the Amazon, supplies rubber and valuable timber; but its resources are only slightly developed. Near the coast there is a strip of cultivated land on which sugar cane, bananas, cotton, and a few other products are raised. Of late, especially in Dutch Guiana, attention has been turned to the production of cocoa and coffee. Some gold is found in each of the Guianas. The Guianas have but one short railway, and in most sections there are almost no roads.

The name Venezuela, which means "little Venice," was given in 1499 because the explorers found an Indian village built in the water along the shore of Lake Maracaibo.

Venezuela
1. Character of country, and products

The Andes cross the western part of Venezuela, while the Guiana Highland extends into the eastern part. Between these two highlands are the broad plains of the Orinoco Valley.

Some of these plains, the treeless, grass covered *llanos*, are occupied by great herds of cattle, as are the pampas of Argentina. There is some farming.

Hardy crops, like potatoes, beans, and barley, are raised on the higher slopes, but below five thousand feet above sea level such products as sugar cane, bananas, cocoa, and coffee are raised. Coffee is the chief export; in fact, Venezuela ranks as the second greatest coffee-producing section.

In parts of Venezuela there are vast forests which produce valuable dyewoods and rubber; and among the mountains are rich mineral deposits, especially gold.

The capital, CARACAS, five or six miles from the sea, is situated upon a plateau, more than three thousand feet above sea level. It is connected with its seaports by a short railway.

2. Chief city

In 1812 Caracas was visited by a terrible earthquake, when a great part of the population was at church. The first shock caused the bells to toll; but after all danger was thought to be past, there came a fearful noise from underground, resembling the rolling of thunder, though louder and longer. Then followed a shaking of the earth, so severe that churches and houses were overthrown, and the inhabitants were buried beneath their ruins. On that day fully twelve thousand persons perished.

SECTION V. THE TROPICAL ANDEAN COUNTRIES

The countries in the western part of South America, named from north to south, are Colombia, Ecuador, Peru, Bolivia, and Chile. Locate each on the map (Fig. 425), and tell what countries are on its border. All but the last named lie entirely in the tropical zone.

FIG. 441.—Dense tropical foliage on the lowlands of Ecuador near the coast.

Each of these countries is very mountainous, for the Andes rise from the sea-coast and extend all the way from Panama to Cape Horn. Which country stretches fully half of this distance? Which is next longest?

Facts about the Andes Mountains

Although the Andes are not so broad as the Cordillera of North America, they form one of the longest and highest mountain chains in the world. The loftiest peak is Aconcagua in Argentina, which rises 22,860 feet above sea level. The loftiest in North America is Mt.

McKinley in Alaska, which is almost half a mile lower (20,460 ft.), or about the height of Mt. Chimborazo in Ecuador.

These lofty mountains are even now growing higher. Now and then, as they are slowly pushed upward, the rocks break apart and severe earthquakes are caused. This region has been visited by some of the most terrible earthquakes in the world's history, destroying many lives and many buildings. Besides, some of the highest peaks are volcanoes from which lava and ashes are at times sent forth.

Variety of climate and of farm products

In such a mountainous country, there is, of course, great variety of climate. Tropical heat prevails throughout the lowlands (Fig. 442); but on the mountain slopes there are temperate and even frigid climates.

There is, therefore, much variety in the farm products. Up to an elevation of three thousand to four thousand feet, bananas, sugar cane, cocoa, and other plants of hot climates flourish. Above this, to an elevation of six or seven thousand feet, tobacco, corn, and coffee are cultivated. From this height up to about ten thousand feet, wheat and our Northern vegetables and fruits do well; but above ten thousand feet the bleak mountain peaks are too cold for farming (Fig. 429).

There are great differences in rainfall, as well as in temperature. Near the equator the rainfall is heavy; but in southern Peru, the climate is arid. On this account the tropical forest gradually disappears toward the south, and is replaced first by arid plains, and then by deserts.

Valuable minerals

Rich deposits of precious metals were found in the Andes soon after the discovery of South America. In fact, this was the principal reason why the Spaniards took possession of so much of the continent. Hundreds of millions of dollars' worth of gold and silver were taken out of the rocks of the Andes Mountains, and every year large quantities are still mined.

Colombia

Colombia, named after Columbus, has seacoast on both oceans. The western part is very mountainous, for several of the Andean ranges end there. Much mineral is found, gold and silver being most important. Valuable emeralds also are obtained.

In the eastern portion, on the other hand, are treeless llanos on which large numbers of cattle are raised. Coffee is the principal product and the chief export; but sugar cane, tobacco, and cocoa also are produced. On the mountain slopes the grains, fruits, and vegetables of temperate climates are grown.

Bogota, the capital and largest city, is situated far in the interior, at an elevation of about a mile and a half above sea level. It has an agreeable climate, even though within the tropical zone.

Panama

The small republic of Panama was formerly a part of Colombia, but it revolted and became an independent country a few years ago. What have you learned about it (p. 94)? What can you tell about the Panama Canal zone (p. 244)?

Ecuador

Why should the name Ecuador, the Spanish word for *equator*, be given to this country? The principal industries are farming and cattle raising. The chief farm products are wheat and barley on the highlands, and coffee, sugar cane, and *cocoa*, on the lowlands. Cocoa is the most important product of Ecuador, and fully one fifth of all that is produced in the world comes from here.

FIG. 442. — A house in Ecuador raised above the ground because of the dampness.

The cocoa tree, which grows in the shade of the larger forest trees, has small pink and yellow blossoms which spring directly from the main trunk and branches. After blossoming, golden-colored pods grow, in each of which are a number of seeds, or beans, about the size of a large almond. After being washed, dried, and roasted, the beans are ready to be made into cocoa and chocolate. What are some of their uses? By what routes might they be shipped from Guayaquil to New York?

Another product of Ecuador, and of some other South American countries, is *sarsaparilla*. The rubber industry is also well developed.

There is some gold mining in Ecuador, but not much mining of other minerals. The country is so mountainous, and the roads are so poor, that it is difficult to carry machinery to the mines. Therefore only the richest deposits are worked. There is almost no manufacturing in the country.

QUITO, the capital and largest city, is situated among the mountains of the interior at an elevation of about nine thousand feet. Next in size is the seaport GUAYAQUIL, the westernmost of the large cities of South America. It is in W. Long. 80°. Does it lie east or west of Washington, D.C.?

Peru

1. Climate

There is abundant rainfall in northern Peru and in the upper Amazon Valley on the eastern side of the Andes. But in southern Peru the climate is arid and even desert (Fig. 430). So little rain falls in southwestern Peru that in some parts, even close by the sea, there is an average of but one shower in seven years.

2. Mining

Peru was one of the most valuable sources of gold and silver for the Spanish conquerors. The Incas, who dwelt there, had collected gold for ornaments, and this the Spaniards seized. Then, opening mines, they

forced the Indians to work in them as slaves. Since that time vast quantities of gold and silver have been obtained in Peru. Valuable deposits of coal, petroleum, and copper also have been found.

FIG. 443. — A group of llamas, the beasts of burden of the lofty Andes.

3. Agriculture

There is much agriculture in Peru, the chief crops being corn, wheat, and potatoes among the mountains, and sugar cane, cotton, tobacco, cocoa, and coffee in the lower and warmer sections. Large numbers of sheep and cattle are raised, and also of the llama and the alpaca (Fig. 443).

A peculiar product of Peru is *coca*, from which *cocaine*, is made; and another is *cinchona*, or *Peruvian bark*, from which *quinine* is manufactured. These plants were cultivated by the Incas before the coming of the Spaniards.

4. Manufacturing and transportation

There is some manufacturing in Peru, especially of sugar and cotton goods. One great difficulty, however, has been that of transportation. The lofty Andes extend the entire length of the country, separating the Pacific coast from the broad, forest-covered plains of eastern Peru. To overcome this difficulty, the Peruvians have built several railways, one of which deserves special mention. Beginning at CALLAO this line passes through Lima; then it climbs the mountains, crossing deep gorges, by means of high trestles, winding about on the very edges of precipices, tunneling through the mountain rock, and finally crossing the western range of the Andes at an elevation of more than fifteen thousand feet.

5. Chief cities

LIMA, the capital (Fig. 444), founded by the Spanish conquerors in 1535, is situated at the base of the Andes. CALLAO, the seaport of Lima, is about seven miles from the capital.

FIG. 444. — A view of Lima, the capital of Peru.

AREQUIPA, at an elevation of seven thousand feet, is separated from the sea by sixty miles of desert. CUZCO is on an interior table-land, at an elevation of more than eleven thousand feet. The ruins of the Inca citadels and "palaces" are still to be seen, and many pure-blooded and half-breed Incas (Fig. 434) still dwell in and near this ancient capital.

Bolivia, named after General Bolivar, the great South American leader in the re-

FIG. 445. — Indians in their grass boats on Lake Titicaca.

volt against Spain, was robbed of its seacoast by Chile. It is a mountainous country, with broad and very high plateaus between the mountain ranges. In one of these valleys lies Lake Titicaca (Fig. 445), partly in Peru and partly in Bolivia. This lake, the greatest in South America, is about a third the size of Lake Erie. It is the most elevated great lake in the world, lying over twelve thousand feet above the sea.

Bolivia

The Incas occupied this region also, and mined much gold. Besides gold, the Spanish discovered veins of copper, tin, and silver, so that mining has been one of the leading industries of the country.

FIG. 446. — La Paz, the largest city of Bolivia, situated in an arid valley among the lofty Andes.

Both the mining and the work of extracting the metals from the ore are very crude. For example, instead of using machines for crushing the ore, as in the United States, sometimes they roll bowlders around on the ore. Since there are almost no railways, goods are carried for the most part by trains of pack mules, donkeys, alpacas, or llamas (Fig. 443). The llama here, as in Peru, is of great value to the inhabitants as a beast of burden, and as a source of wool for clothing.

Like the Amazon Valley of Brazil, much of eastern Bolivia is an almost unknown forest wilderness. On the plateau and in the mountain valleys, however, there are settlements where agriculture is carried on, with the same products as those of Peru. Name them. Most of these are consumed at home, though some coffee is exported.

A railway line connects western Bolivia with the sea; but there is great need of others. Another need is the improvement of the water ways, to provide river transportation to the Atlantic. Through what rivers could boats pass to the sea?

Find the capital of Bolivia. La Paz (Fig. 446), the largest city, has twice as many inhabitants as the capital.

SECTION VI. CHILE

Surface features

The eastern boundary of Chile is the divide between the Atlantic and Pacific drainage slopes; and since this divide runs along the Andes, the country is very mountainous, and narrow from east to west. Measure its length; also its width. Except in the south, the coast line is regular, like that of the rest of South America.

Climate

The climate varies more than that of any other South American country. The northern part is within the torrid zone, while the southern end reaches far into the bleak south temperate zone; and on the mountain slopes there is every climate, from torrid to frigid (Fig. 447). The very name, Chile, comes from an Indian word for snow.

There is also great variation in rainfall. Northern Chile is arid, and in some portions a desert; while central and southern Chile reach into the rainy belt of prevailing westerlies (Fig. 405). The best developed section of the country lies in the middle part, between the hot, arid north and the bleak, rainy south.

There is much mineral wealth, including gold, silver, coal, and copper. Copper is one of the most valuable of these minerals, and Chile, like the United States, is one of

Fig. 447. — A view in the lofty snow-covered Andes of Chile.

Mining

FIG. 448. — Indians living in the cold southern region in the Straits of Magellan.

the great copper-producing countries of the world. Even more important than the copper are the beds of nitrate of soda, which yield many million dollars' worth of *nitrate* every year. This substance is the principal export of the country.

The nitrate beds lie in the midst of the Desert of Atacama (Fig. 427), in which rain seldom falls. The substance occurs in layers from a few inches to one or two feet thick, over an area thirty or forty miles in breadth. Its chief use is as a fertilizer, for which purpose large quantities are shipped from the port of IQUIQUE.

Agriculture

Agriculture is extensively carried on in Chile, especially in the rainy middle portion. The principal crops are the various grains, tobacco, fruits, and vegetables. More wheat and barley are produced than are needed at home, so that Chile helps to supply other nations with these grains. Large herds of cattle are reared; and in southern Chile sheep raising is one of the chief industries. Hides, leather, and wool are exported.

There is more manufacturing than in most South American countries, the principal kinds being flour milling,

FIG. 449. — The shipping in the harbor of Valparaiso.

cheese making, tanning, and shoemaking. Manufacturing is rapidly increasing; but, as in other South American countries, it is still necessary to import machinery and other manufactured articles from Europe and from the United States.

Manufacturing

Chile is one of the most progressive nations in South America. Its government is good, and its industries are well developed. It is interesting to note that the two most advanced nations of South America lie side by side in the temperate zone, while the next most progressive country, Brazil, is partly in that zone.

Progress of the country

Since Chile is the leading Andean country, it is natural that it should have the largest city on the Pacific coast. This is SANTIAGO, the capital, which has a population of one third of a million. It is situated fifty miles inland, and half a mile above the level of the sea. VALPARAISO (Fig. 449), the largest and busiest port on the Pacific coast, is also in Chile. It is about half the size of Santiago.

The principal cities

SECTION VII. ISLANDS NEAR THE CONTINENT

Just off the coast of Venezuela, opposite the mouth of the Orinoco, is the low island of *Trinidad*, a British possession. This island is especially noted for its pitch lake, from which asphaltum is obtained for use in making asphalt pavements. The asphaltum oozes slowly from the ground; and, as it is dug out, more takes its place, showing that there is a very large supply beneath the surface.

On the north side

Just east of the southern tip of South America are the *Falkland Islands*, which belong to Great Britain. Still farther east are the islands of *South Georgia*, also British. They are ice-bound lands, with no permanent inhabitants.

On the southeast

West of Chile, and belonging to that country, is the island of *Juan Fernandez*. This is the island where Selkirk was wrecked, and by some is thought to be the island on which Defoe located the story of Robinson Crusoe. It seems quite certain, however, that the novelist described Tobago, just north of Trinidad, and not Juan Fernandez.

On the west

The *Galapagos Islands*, about six hundred miles west of Ecuador, on the equator (Fig. 107), are a group of small volcanic islands owned by Ecuador. They are too far from the continent to appear on our map.

Review Questions

1. Compare North and South America in area and population. 2. Why might it have been supposed that South America would be settled as rapidly as North America? 3. Give several reasons why it has not been settled so rapidly. 4. Describe the plant life. 5. The animal life. 6. What can you tell about the native inhabitants? 7. Compare Argentina with the United States as to area, climate, and surface features. 8. What are its principal products? 9. What is the condition of manufacturing? 10. What are the conveniences for transportation? 11. Name the principal products of Paraguay and Uruguay. 12. Name and locate the capitals of Paraguay, Uruguay, and Argentina. 13. What can you tell about Buenos Aires? 14. Locate other cities mentioned. 15. Compare Brazil with the United States in area and population. 16. Describe the conditions in the Amazon valley. 17. What is the appearance of the tropical forest? 18. What valuable products are obtained there? 19. How is rubber obtained? 20. What are the agricultural products of Brazil? 21. State some facts about the coffee industry in Brazil. 22. What is the condition of mining? Of manufacturing? 23. Name and locate the

principal cities. 24. Name the Guianas. What are their chief products? 25. Describe the surface features of Venezuela. 26. What are its products? 27. Locate the chief city. 28. What can you tell about the Andes Mountains? 29. Why is there a great variety of farm products in the tropical Andean countries? 30. What minerals are found there? 31. What about the surface features and the products of Colombia? 32. What is the leading city? 33. What are the agricultural products of Ecuador? 34. What about mining and manufacturing? 35. Name and locate the principal cities of Ecuador. 36. What climate has Peru? 37. What about mining there? 38. Agriculture? 39. Manufacturing and transportation? 40. Name and locate its chief cities. 41. Describe the surface features of Bolivia. 42. Tell about mining in that country. 43. Agriculture. 44. Commerce and chief cities. 45. Describe the surface of Chile. 46. The climate. 47. What can you tell about mining there? 48. Agriculture? 49. Manufacturing? 50. What about the progress of Chile? 51. Locate the chief cities. 52. Name, locate, and tell the principal facts about the islands near South America.

Comparisons with North America

1. Which of the two Americas has the advantage in regard to latitude? Show how. 2. Locate the arid sections in each continent (Figs. 406, 430). 3. Point out the rainiest section in each. 4. Which of the two continents has the better position for world commerce? Why? 5. Into what ocean do the principal rivers of South America flow? Of North America? 6. What can you say about the regularity of the coast of the two continents? Which has the advantage in this respect? How? 7. Locate the five principal coast cities of South America; of North America. How do they compare in size? 8. What about the number of lakes in each continent, and their value for commerce? 9. What about the number of large cities in the interior of each continent? 10. Compare both Brazil and Argentina with the United States in area; in population. (See the Appendix.) 11. Compare Chile with Texas in these two respects. 12. Make a list of the important farm products common to South America and the United States. 13. Name some products that are extensively raised in one and not in the other. 14. Which parts of each continent are especially noted for cotton? Coffee? Wheat? Cattle and sheep? Copper? Precious metals? 15. What is the prevailing kind of government in North and in South America? What sections have a different kind of government?

Suggestions

1. Make a sand model of South America, showing the highlands and lowlands. 2. Read about Pizarro's conquest of Peru. 3. Find out more about the Inca Indians. 4. What are the five leading cities of South America? 5. Compare South America with North America in regard to distance from Europe. Which has the advantage in this respect for immigration? 6. Will the Panama Canal be of importance to us in our trade with any part of South America? Examine a globe to see. 7. If the southern end of Chile were placed at San Diego in California, where in North America would the northern end reach? 8. Draw an outline map of South America, putting in the mountain ranges, chief rivers, and cities. Add the boundaries and names of the several countries. 9. Name and locate the capital of each South American country.

PART VI. EUROPE

Map study

1. Trace the boundary line between Europe and Asia, naming the mountains and waters that in part form it. 2. How does the coast line of Europe compare in regularity with that of South America? Of North America? 3. Name the largest peninsulas, and draw an outline map to show them. 4. Where are the highest mountains? 5. Name and locate the principal rivers. 6. Where are the plains? Which very large country is made up mainly of plains? 7. How does Russia compare in size with the other countries of Europe? With the United States? (See Appendix.) 8. In what zones does Europe lie? 9. The 40th parallel of latitude crosses what countries of Europe? Through or near what cities in the United States does it pass? 10. Point out those countries of Europe in which some of the people that you know used to live. 11. What route did they probably take in order to reach America? 12. Walk toward Europe.

SECTION I. GENERAL FACTS ABOUT EUROPE

Eurasia

You have already learned (p. 95) that Eurasia is the largest land mass on the earth. It extends northward far within the Arctic Circle, and southward almost to the equator. From east to west it reaches nearly halfway around the earth. Show this on a globe. It is much larger than North and South America together.

The peninsula called *Europe*

Eurasia is the most irregular of all the lands, having many large peninsulas. Name four or five of these (Fig. 566). The largest of them all is the one we call *Europe*. Notice on the map (Fig. 450) that water borders Europe on the southern, western, and northern sides, making it a peninsula. What are the names of the bodies of water that so nearly surround Europe?

It is not easy to tell just where to draw the boundary between Europe and Asia. Indeed, some maps show one boundary line, some another. Trace the boundary, and tell what parts are natural (p. 102), and what parts artificial. Although joined to Asia on the east, it is common to class the peninsula of Europe as one of the continents.

The surface features

1. The mountains

There is much mountainous land in Europe, as you can see on the relief map (Fig. 451). In the northwest, there are low mountains in the British Isles, and a long, low chain in the Scandinavian peninsula. Another long range, the Urals, extends from north to south along the eastern boundary of Europe. The most mountainous section, however, is in the south, and here the mountains are highest. Name the different ranges. Which lie farthest east? Which farthest west? What is the name of the range in the Italian peninsula? Are all the peninsulas mountainous? Besides these main mountain ranges, there are other


EUROPE
Scale of Miles
0 100 200 300 400 500 600
Cities with over 1,000,000 London
Cities with 500,000 to 1,000,000 Naples
Cities with 200,000 to 500,000 Leipzig
Smaller Places Venice
Capitals with less than 200,000 BERNE
Capitals ⊙ Other Cities ○
ARCTIC OCEAN
ATLANTIC OCEAN
NORTH SEA
BALTIC SEA
MEDITERRANEAN SEA
BLACK SEA
CASPIAN SEA
ARAL SEA
ADRIATIC SEA
AEGEAN SEA
BAY OF BISCAY
ICELAND (TO DENMARK)
BRITISH ISLES
SCOTLAND
IRELAND
ENGLAND
NORWAY
SWEDEN
FINLAND
LAPLAND
RUSSIA
GERMAN EMPIRE
DENMARK
FRANCE
SPAIN
PORTUGAL
AUSTRIA-HUNGARY
ITALY
ROUMANIA
SERVIA
BULGARIA
TURKEY
GREECE
TURKEY IN ASIA
ASIA
AFRICA
London
Paris
Berlin
Vienna
St. Petersburg
Moscow
Constantinople
Madrid
Lisbon
Rome
Naples
Warsaw
Stockholm
Christiania
Copenhagen
Brussels
Amsterdam
Budapest
Bucharest
Odessa
Kief
Riga
Hamburg
Marseille
Barcelona
Lyon
Bordeaux
Milan
Turin
Genoa
Florence
Venice
Glasgow
Edinburgh
Liverpool
Manchester
Birmingham
Dublin
Belfast
Prague
Munich
Leipzig
Dresden
Breslau
Cologne
Frankfurt
Lodz
Smyrna
Salonica
Athens
Palermo
Messina
Tunis
Algiers
URAL MTS.
CAUCASUS MTS.
CARPATHIAN MTS.
PYRENEES
APENNINES
ARCTIC CIRCLE
Longitude West from Greenwich
Longitude East from Greenwich
WILLIAMS ENGRAVING CO., N.Y.

FIG. 450.

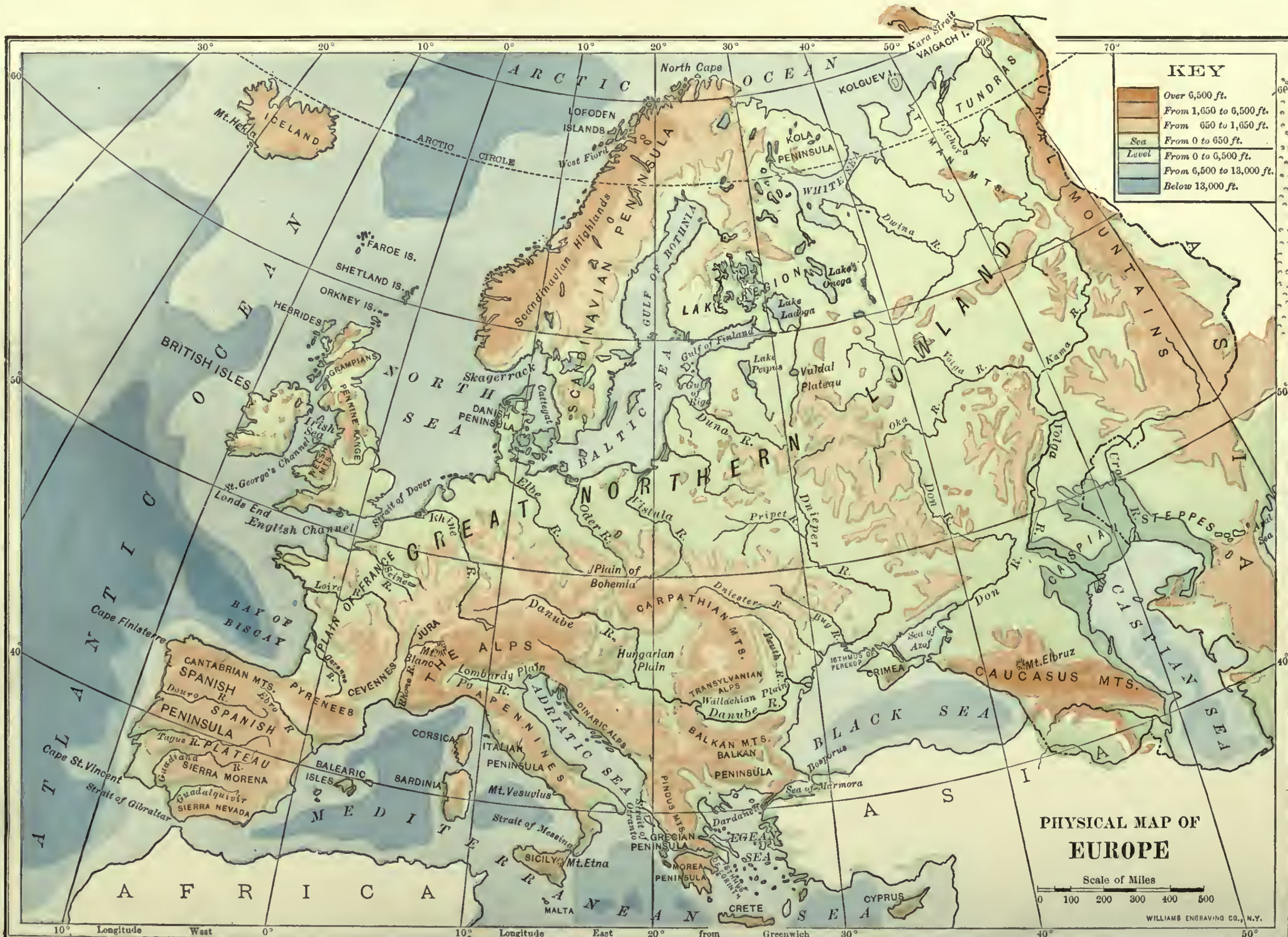

PHYSICAL MAP OF
EUROPE
KEY
Over 6,500 ft.
From 1,650 to 6,500 ft.
From 650 to 1,650 ft.
Sea Level
From 0 to 650 ft.
From 0 to 6,500 ft.
From 6,500 to 13,000 ft.
Below 13,000 ft.
Scale of Miles
0 100 200 300 400 500
WILLIAMS ENGRAVING CO., N.Y.
Longitude West
Longitude East from Greenwich
ARCTIC OCEAN
ATLANTIC OCEAN
ARCTIC CIRCLE
North Cape
KOLGUEV I.
VAIGACH I.
Kara Strait
TUNDRAS
URAL MOUNTAINS
TIMAN MTS.
Pitchora R.
ICELAND
Mt. Hekla
FAROE IS.
SHETLAND IS.
ORKNEY IS.
HEBRIDES
BRITISH ISLES
GRAMPIANS
PENNINE RANGE
WELSH MTS.
Irish Sea
St. George's Channel
Lands End
English Channel
Strait of Dover
NORTH SEA
LOFODEN ISLANDS
West Fiord
Scandinavian Highlands
SCANDINAVIAN PENINSULA
Skagerrack
Cattegat
DANISH PENINSULA
BALTIC SEA
GULF OF BOTHNIA
Gulf of Finland
Gulf of Riga
KOLA PENINSULA
WHITE SEA
LAKE REGION
Lake Onega
Lake Ladoga
Lake Peipus
Valdai Plateau
Dwina R.
Volga R.
Kama R.
Oka R.
Don R.
Duna R.
Dnieper R.
Pripet R.
Vistula R.
Oder R.
Elbe R.
Rhine R.
Seine R.
Loire R.
Garonne R.
Rhone R.
GREAT NORTHERN LOWLAND
Ural R.
STEPPES
Aral Sea
CASPIAN SEA
CAUCASUS MTS.
Mt. Elbruz
Sea of Azof
CRIMEA
ISTHMUS OF PEREKOP
BLACK SEA
Bosporus
Sea of Marmora
Dardanelles
Plain of Bohemia
PLAIN OF FRANCE
CEVENNES
JURA
Mt. Blanc
THE ALPS
Lombardy Plain
Po R.
Danube R.
Hungarian Plain
CARPATHIAN MTS.
TRANSYLVANIAN ALPS
Wallachian Plain
Dniester R.
Pruth R.
Bug R.
DINARIC ALPS
ADRIATIC SEA
APENNINES
ITALIAN PENINSULA
Mt. Vesuvius
Strait of Messina
SICILY
Mt. Etna
MALTA
CORSICA
SARDINIA
BALEARIC ISLES
BALKAN MTS.
BALKAN PENINSULA
PINDUS MTS.
Strait of Otranto
GRECIAN PENINSULA
MOREA PENINSULA
ISTHMUS OF CORINTH
EGEAN SEA
CRETE
CYPRUS
BAY OF BISCAY
Cape Finisterre
PYRENEES
CANTABRIAN MTS.
SPANISH PENINSULA
SPANISH PLATEAU
Douro R.
Ebro R.
Tagus R.
Guadiana R.
SIERRA MORENA
Guadalquivir
SIERRA NEVADA
Cape St. Vincent
Strait of Gibraltar
MEDITERRANEAN SEA
AFRICA
ASIA

FIG. 452.


ARCTIC OCEAN
ATLANTIC OCEAN
NORTH SEA
BALTIC SEA
Iceland
Scandinavian Mts.
St. Petersburg
London
English Channel
Berlin
Paris
Seine R.
Rhine R.
Vienna
THE ALPS
CARPATHIAN MTS.
PYRENEES
Rhone R.
Danube R.
Dnieper R.
Ural R.
Ural Mts.
CAUCASUS MTS.
Mt. Elbruz
BLACK SEA
CASPIAN SEA
ASIA
BALKAN MTS.
Adriatic Sea
APENNINES
Rome
Constantinople
Strait of Gibraltar
MEDITERRANEAN SEA
AFRICA
RELIEF MAP
OF
EUROPE
SCALE OF MILES
0 100 200 300 400 500 600

FIG. 451.

lower, shorter mountain ranges, as in the Spanish peninsula, and north of the Alps. The Caucasus (Fig. 453) are the loftiest of all these mountains, and the Alps (Fig. 454) are next in height. The rains and snows of the Alps find their way to the sea through several of the large rivers of Europe. What are the names of the largest (Fig. 452)? Headwaters of four of them are within forty miles of one another in the Alps. Which are they?

FIG. 453. — A view over the crests of the lofty snow-covered Caucasus Mountains. The valley in the front is filled with clouds.

FIG. 454. — The lofty Alps, from whose summits the snow never melts. Many people visit this place every summer because of the grand scenery.

Bounded by the mountains of the northwest, the east, and the south there is an extensive lowland (Fig. 451). This plain extends from southern England and northern France, through Belgium and Holland, or the "Low Countries," entirely across Germany (Fig. 479) and Russia (Fig. 450). It broadens toward the east until it includes almost all of Russia. Estimate its length from east to west. About two thirds of Europe is included in this plain.

2. The low plain between these mountains

FIG. 455. — Map of the coal fields of Europe.

You have learned that the irregular northeastern coast line of North America was caused by the sinking of the land. The irregular coast of northwestern Europe was caused in the same way. The Baltic Sea and its gulfs are old land valleys, sunk beneath the sea; and some of the hills of this sunken land rise as islands and peninsulas. Other parts of it form shallow banks where food fish abound.

3. The coast line

The growth of the mountains in southern Europe has caused many peninsulas, with bays, gulfs, islands, and seas between. Even the great Mediterranean Sea lies in a basin formed by the sinking of a part of the earth's surface.

As a result of all these movements of the land, Europe has the most irregular coast of all the continents. Name the larger peninsulas, gulfs, and seas that border Europe. How about the number of fine harbors? Show, by examples, how such an irregular coast is of advantage in allowing vessels to sail far into the interior of the continent.

We have already seen that the minerals beneath the soil are of great use to man, and that mining and manufacturing them are important industries. Europe has a great wealth of valuable minerals, and among them the two most useful of all, — coal and iron. From the map (Fig. 455) you can see that coal is found in many places, and, therefore, that many countries of Europe have a supply of this valuable fuel. Most of this coal is bituminous, but some is anthracite.

Mineral wealth

Trace the 50th parallel of latitude on a globe or a map of the world. Notice that while the 49th parallel forms the northern boundary of western United

Climate

1. The latitude of Europe

States, it passes entirely south of England, crosses France near Paris, and extends through southern Germany and Russia. From this it is seen that by far the larger part of Europe lies farther north than the United States, and due east of Canada. St. Petersburg is in the same latitude as northern Labrador; and the tips of the peninsulas of southern Europe reach no farther south than the southern boundary of Virginia.

2. The population and crops there

In spite of its northern latitude, Europe has over four times as many inhabitants as our own continent, or nearly four hundred million persons. Yet it is less than half the size of North America.

In the Far North, near the Arctic Ocean, the climate is bleak, and there are barren, frozen tundras. But south of this is a belt of fir, spruce, pine, and other trees. Within the forest belt, and south of it, the climate is mild enough for the growth of the grains and fruits that flourish in southern Canada and northern United States. Farther south, in southern Europe, in the latitude of central United States, such semi-tropical fruits as oranges, lemons, olives, and figs are cultivated. That is to say, the products of the greater part of Europe are such as grow several hundred miles farther south in eastern North America.

3. Explanation of these surprising facts

One of the chief reasons for this mild climate, so far north, is the direction of the winds. Northern Europe is in the belt of prevailing west winds, and these blow from the ocean which, as you have learned (p. 303), is warmed by a great ocean current that flows from the south. These winds bring both warmth and moisture to the land. Without such winds, much of this densely populated continent (Fig. 457) would be a barren waste, like Labrador.

(1) The prevailing west winds

In North America, where high mountains extend north and south along the entire western side of the continent, the warm, damp air soon loses its moisture as it moves eastward (p. 294). In Europe, on the other hand, where the high ranges extend nearly east and west, the mountains interfere much less with the movement of vapor to the interior. For that reason the west winds give up their moisture little by little, and over a wide area. This is the chief reason why there is no arid land from western Ireland to eastern Russia.

(2) The absence of north and south mountain ranges in the west

Examine Figure 456 to see where the rainfall in Europe is light. One section is in the east, far away from the ocean. Another is in southern Spain, Italy, and Greece. Here the rainfall comes mainly in the winter, and the summers are quite dry. The reason is that in winter the west winds blow here. But in summer this section, like southern California, lies in the belt of horse latitudes.

Why southern Europe has a dry climate

Make a list of the different countries that you find on the map of Europe. How many are there? Each of these has its own language, so that a person living in one country cannot understand what is said in another, unless he has learned its language.

Why so many countries, with different languages

Some of the reasons for so many coun-

ries and languages are easy to understand. For instance, it is plain why the British Isles should form a separate nation. They are surrounded by water, and are thus cut off from other people. Naturally, therefore, the British have remained independent, and have formed a language of their own.

1. Because the water often separates the people

FIG. 456. — Rainfall map of Europe.

Italy is *nearly* surrounded by water; and on the north, where there is no water, the Alps Mountains rise, like a great wall, shutting out people on that side. Italy has, therefore, developed a government and language of its own. Note how many other countries of Europe are on peninsulas. Name them.

2. Or water and mountains separate them

The water and mountains have had much influence in breaking Europe up into so many countries with different languages. In times past, when there were no railroads, and there was little travel, each lot of people, thus separated from others, learned to govern themselves and to speak a separate language.

There is a third important reason for so many countries and languages. Hundreds of years ago wars were very frequent, — much more so than now. Groups of people, including those who were not separated either by water or by mountains, often quarreled with one another, went to war, and finally set up different governments. What countries do you find on the map that do not seem to be cut off from their neighbors on all sides, either by water or by mountains?

3. Or their quarrels separate them

There was a time when there were even more countries in Europe than now, but in recent years many of the smaller divisions have been united. This shows that people are gradually learning to live together in peace.

Although Europe is called a continent, it is really very small to be given that name. Next to Australia, it is the smallest of all the continents. The whole of Europe is only a little larger than the United States, including Alaska. Yet it contains nearly five times as many inhabitants as our country. This makes it plain that Europe is much more thickly settled than the United States.

Area and population compared with our own

In spite of the fact that Europe is so small, it is really the most important of all the continents.

How Europe is the leading continent

Fig. 457. — What reasons can you suggest for the fact that certain parts, like central Spain, Northern Russia, and Scandinavia, and the country between the Black and Caspian seas, are not densely populated?

In the first place, it is the mother continent for the New World, because America has been settled by immigrants from Europe (Fig. 458). What different countries of Europe first settled North America (p. 101)? South America (p. 312)? Point out these countries on the map of Europe. What country of Europe still holds about half of North America as its colony? Europe is the mother continent of other parts of the world, also, as you will learn later.

1. The mother continent

While Europe is the *mother* continent of much of the world, she is also the *teacher* of most of it. Her children, who are scattered over the New World and elsewhere, naturally look to her for instruction. Other parts of the world, such as China and Japan, look to her, too.

2. The teacher of the world

The countries of Europe, being so much older and so much more progressive than many other countries, have long taken the lead in discovering the best ways of carrying on agriculture, mining, manufacturing, and commerce. Most of the best books, also, and a large part of the best music, paintings, and sculpture have come from Europe. For these reasons people from all parts of the world look to Europe for the best thoughts on most subjects, and they often go there to study.

Some of the countries of Europe have been far more active than others as


BRITISH ISLES
Scale of Miles
0 50 100 150
Cities with over 1,000,000 LONDON
Cities with 500,000 to 1,000,000 Glasgow
Cities with 300,000 to 500,000 Edinburgh
Cities with 100,000 to 300,000 Portsmouth
Smaller places Inverness
Capitals of Countries
Other Cities
ATLANTIC OCEAN
NORTH SEA
IRISH SEA
ENGLISH CHANNEL
SHETLAND ISLANDS
MAINLAND
FAIR I.
ORKNEY ISLANDS
WESTRAY
SANDAY
STRONSAY
HOY
Pentland Firth
Duncansby Head
Wick
Cape Wrath
The Minch
HEBRIDES
SKYE
Sea of the Hebrides
MULL
Firth of Lorne
JURA
ISLAY
ARRAN
Firth of Clyde
SCOTLAND
GRAMPIANS
Dornoch Firth
Moray Firth
Kinnaird Head
Peterhead
Nairn
Keith
Inverness
Loch Ness
Aberdeen
Ben Nevis
Montrose
Dundee
Perth
Firth of Tay
Kirkcaldy
Firth of Forth
Glasgow
Greenock
Paisley
R. Clyde
Hamilton
Kilmarnock
Ayr
Leith
Edinburgh
R. Tweed
Dumfries
Solway Firth
North Channel
Malin Head
Bloody Foreland
L. Foyle
Londonderry
DONEGAL MTS.
Lough Neagh
Belfast
Donegal Bay
Killala Bay
Erris Head
Enniskillen
Sligo
Lurgan
Armagh
Newry
Ballina
ACHILL I.
Dundalk
Westport
Dundalk Bay
Drogheda
L. Mask
L. Corrib
Athlone
Galway
Galway B.
ARAN IS.
Dublin
Tullamore
Kingstown
IRELAND
R. Shannon
Ennis
Wicklow
Loop Head
R. Shannon
Kilkenny
Carlow
Barrow R.
Limerick
Tipperary
Clonmel
Wexford
Tralee
Killarney
Lakes of Killarney
Waterford
Carnsore Pt.
Cork
Queenstown
Mizen Head
St. George's Channel
CHEVIOT HILLS
PENNINE RANGE
Newcastle
R. Tyne
Gateshead
South Shields
Sunderland
Carlisle
Hartlepool
Workington
Darlington
Middlesbrough
Scarborough
ISLE OF MAN
Barrow-in-Furness
Lancaster
York
Preston
Bradford
Leeds
Hull
Blackburn
Bolton
Halifax
R. Humber
Grimsby
Liverpool
Birkenhead
Oldham
Doncaster
Sheffield
Lincoln
Holyhead
ANGLESEY
Manchester
Chester
Macclesfield
Burslem
Mansfield
Nottingham
The Wash
Snowdon
Longton
Derby
R. Trent
King's Lynn
Shrewsbury
Norwich
Yarmouth
Cardigan Bay
Walsall
Leicester
Peterborough
WALES
Wolverhampton
Birmingham
R. Ouse
Lowestoft
R. Severn
Aberystwyth
Stratford on Avon
Cambridge
Worcester
Bedford
Ipswich
ENGLAND
Gloucester
Luton
Colchester
Haverfordwest
Oxford
Swansea
Merthyr Tydfil
LONDON
West Ham
Pembroke
Cardiff
R. Thames
Swindon
Bristol
Reading
Greenwich
Croydon
Chatham
Ramsgate
Dover
Bristol Channel
Bath
Folkestone
Barnstaple
Winchester
Taunton
Southampton
Hastings
Strait of Dover
Boulogne
Exeter
Brighton
Worthing
Portsmouth
I. OF WIGHT
Bournemouth
Lyme Bay
Torquay
Plymouth
Truro
Penzance
Lands End
Falmouth
SCILLY IS.
Dieppe
FRANCE
Cherbourg
CHANNEL IS.
Williams Engraving Co., N.Y.
Longitude West from Greenwich
Longitude East

FIG. 459.

world leaders. There are six that are now especially prominent; namely, the British Isles, Germany, France, Italy, Austria-Hungary, and Russia. Locate each of these.

Europe's World Powers

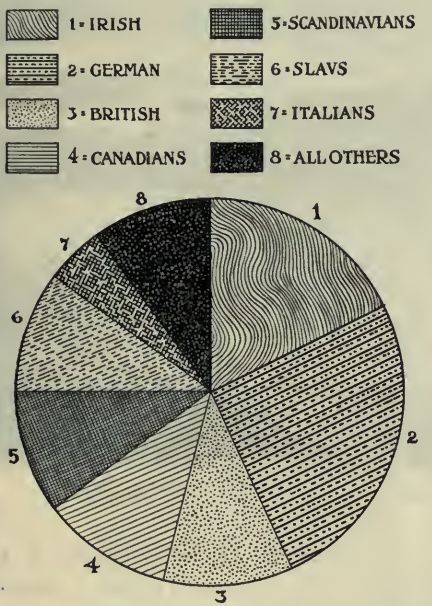


FIG. 458. — A comparison of the foreign-born residents of the United States, according to the nations from which they come. In this figure the space marked 1 represents the native-born Irish living in the United States in 1900; the space marked 2 represents the Germans, etc.

They are called the *Great Powers of Europe*, because they are the most powerful countries on that continent. They are also known as *World Powers*, because they are among the most powerful nations of the world. The United States and Japan are the only other World Powers. The remaining countries of Europe are called the *Lesser Powers*. We will study the Great Powers first.

Review Questions

1. What is meant by Eurasia? By Europe? 2. Where are the mountains found? 3. Name the chief ranges. 4. Describe the large plain. 5. Explain the irregular coast line, and state some of its advantages. 6. What about mineral deposits? 7. What is the latitude of Europe? 8. What about the population, and the farm products? 9. How is the climate influenced by the prevailing west winds? 10. By the abscene of north and south mountain ranges in the west? 11. Why is the climate of southern Europe dry and mild? 12. Why has Europe so many independent countries with separate languages? 13. What about the area and population of Europe? 14. What reasons are there for regarding Europe as the most important continent? 15. Name and locate the Great Powers of Europe. Why also called World Powers?

Suggestions

1. Draw an outline map of Europe. Put in the boundaries of the principal countries. 2. What results might follow, if the mountains of Europe extended north and south near the western coast? 3. Can you tell about any of the great wars and generals of Germany, England, or France? 4. Learn some facts about Napoleon. 5. Can you tell of any of the changes in boundary lines; for example, in Poland, or between France and Germany?

SECTION II. THE GREAT POWERS OF EUROPE

1. The British Isles (Fig. 459)

Map study

1. Walk toward the British Isles. 2. What two large islands do they include? 3. What waters separate these two? 4. Name the three divisions of Great Britain. 5. Locate the Orkney, Hebrides, Shetland, and Channel islands. They are included among the British Isles. 6. What sea lies east of Great Britain? 7. What country on the continent is nearest to Great Britain (Fig. 493)? What waters separate the two? 8. Compare the coast line with that of Spain (Fig. 493); of Norway (Fig. 450). 9. What part of North America is in the latitude of London?

FIG. 460. — Loch Lomond, a beautiful lake on the southern border of the Scottish Highlands.

Why most truly our mother country

Of all the European countries, the one most nearly related to us is the *United Kingdom* of Great Britain and Ireland. It is from these two islands, called the *British Isles*, that we have obtained our English language; and from them, too, a larger number of settlers have come to our shores than from any other country in the world (Fig. 458). Moreover, we carry on more commerce with the United Kingdom than with any other nation.

While, therefore, other European countries have some claim to be called mother countries to us, — since they have sent so many settlers here, — the United Kingdom is most truly of all our *Mother Country*.

The United Kingdom consists of two islands, *Great Britain* and *Ireland*. The larger of these, Great Britain, is made up of three parts — *England*, *Scotland*, and *Wales*. The two islands together are much smaller than our one state of California, but there are nearly half as many people living in them as live in the entire United States. This shows that the British Isles are very densely settled.

The smallness of this kingdom

In spite of its small size, the United Kingdom is in many respects the most powerful and the most important country in the world. It carries on more foreign commerce than any other nation; it has more wealth than any other; it has more and larger colonies; and in it is London, the largest city in the world.

Its importance

There are, of course, excellent reasons why so small a country should have be-

Fig. 461. — Loch Achray, in the Scottish Highlands.

FIG. 462. — Sheep grazing on the mountain slopes in the Scottish Highlands.

than two thousand feet above the sea, and the highest peak in the Islands, Ben Nevis, is only forty-three hundred feet high. Yet, for the most part, they are too high or rugged for farming.

Not all parts of these islands have a rough surface. There are fertile plains and valleys in England and in Ireland; and even in Scotland there is a fertile lowland, called the *Lowlands of Scotland*, which lies south of the Highlands.

ome so important. Let us see what hey are.

It is certainly not agriculture that as given the United Kingdom its rank. Indeed, in so small a country, one would hardly expect it to be. Even aside from its size, however, there re two reasons why agriculture is not f great importance here.

Why agriculture is not specially important

In the first place, much of the land is oo hilly and rocky for farming. This s true, for instance, of the *Scottish Highlands*, which occupy he largest part of Scotand (Figs. 460–462). That s a region of low mounains, so rugged and barren hat few people live there. There are low mountains lso in northern England nd in Wales; and there is rim of highlands extendng almost entirely around reland. These mounains rarely rise more

The hilly urface

In the second place, the islands are so far north that the summer climate is too cool for agriculture. London, for instance, is seven hundred miles farther north than New York; and the British Isles are in the same latitude as Labrador. It is too cool even for wheat raising in the north-

2. The cool climate

FIG. 463. — An English country scene. On the left of the road, bordered by hedges, is a field of wheat; on the right, watercress is being raised.

ern part of the British Isles. Indian corn cannot be grown in any part, nor is grape culture general. Of course, then, such products as cotton, tobacco, and sugar cane are quite out of the question.

However, it is possible to raise the grains and vegetables of cool temperate climates, such as oats, barley, cabbages, turnips, peas, beans, and potatoes. Another crop that thrives here is grass. The winds come mainly from the west, causing a damp climate (Fig. 464); and since they blow from the warm ocean, the winters are not severe. Although the summers are cool, the winters are milder than in northern United States. Therefore, grass remains green throughout most of the year. It is because of its green grass that Ireland is often called the Green, or Emerald Isle.

The farm products

1. Grains, vegetables and grass

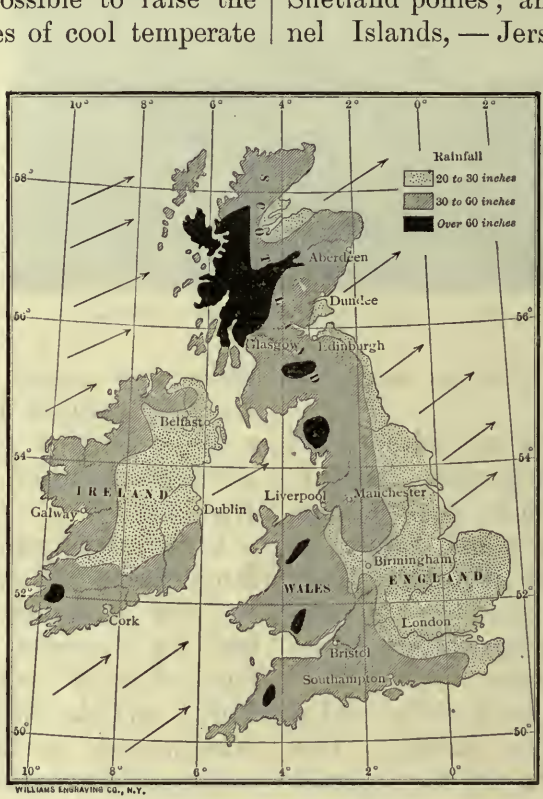


FIG. 464. — Rainfall of British Isles.

Largely on account of the fine grass, the chief agricultural industry of the British Isles is grazing (Fig. 465). There are large numbers of horses and cattle, and still greater numbers of sheep. There are almost as many sheep in the British Isles as there are people, and in Scotland there are five times as many. The British Isles are noted for their fine cattle, sheep, and horses. Some of the breeds of sheep are widely known for their fine wool. The Shetland Islands are famous for Shetland ponies; and on the three Channel Islands, — Jersey, Guernsey, and Alderney, near the French coast — three breeds of cattle have been developed, which are well known in the United States.

2. Live stock

These animals supply many valuable products, such as milk, butter, meat, hides, and wool. Yet far too little food is produced in these islands to feed the people. There are so many persons engaged in other occupations that, if no food came from abroad, they would, it is said, begin to suffer from famine within a month. How different that is from our own country, which has so large an area, and so varied a climate, that it supplies not only the food we need, but enormous quantities to send abroad!

Lumbering and fishing

There is almost no lumbering, for there is scarcely any forest except that in private parks. Almost all the wood used in the British Isles has to be brought from abroad.

Fishing is a very important industry along the coast; also on the fishing banks of the

North Sea, and of the ocean north and west of the islands. Among the fish caught are cod, haddock, and herring, the same kinds that are caught off the coast of New England and Newfoundland. Another important kind is a flatfish, the sole, which resembles the flounder of our eastern coast. These salt-water fish are much used as food by the British people. Salmon enter the rivers of northern Great Britain, and oysters are found along the southern coast.

States and Germany, produce more iron ore. There are also clays, salt, building stones, and other valuable minerals.

Figure 466 shows the sections of Great Britain in which coal is found. While most of the coal is bituminous, that in southern Wales is more like our anthracite. Large numbers of miners in the United States are

FIG. 465. — An English farm with a flock of sheep and a herd of cattle grazing in the pasture.

Mining

One of the principal reasons why these islands have made such progress is the abundance of useful minerals that lie buried in the rocks. More than half a million people in the British Isles are engaged in mining.

The most valuable of the minerals are coal and iron ore, which are widely scattered. The United Kingdom is the second greatest coal-producing country in the world, ranking next to the United States. Only two nations, the United

Welshmen who have come from that section.

None of the British iron ore is far from coal; and in some places the same shaft is used to bring both coal and iron to the surface. Limestone is also abundant and near at hand. This reminds us of the conditions at Birmingham, Ala. (p. 160), which was named after BIRMINGHAM, England. Find Birmingham in Figure 466. Note the other cities near the coal fields. Why should large manufacturing cities develop here?

With plenty of coal and iron, Great Britain has become one of the leading iron and steel manufacturing centers in the world. The products of the factories are used not only at home, but are sent abroad in great quantities.

Manufacturing
1. Iron and steel goods

The leading center for the manufacture of iron and steel is BIRMINGHAM, in England. The next center is in and near Glasgow, in Scotland. The two cities, GLASGOW (Fig. 473) and EDINBURGH, lie in the *Lowlands of Scotland*, a fertile agricultural region, rich in coal and iron. Glasgow is the principal city for steel shipbuilding in the world. SHEFFIELD, a third center for iron and steel manufacturing, has for centuries been noted for its fine cutlery. In the smaller cities and towns near these places, also, there is much iron manufacturing.

The island is so small that coal and iron are easily sent to the coast and are cheaply shipped to all points. Therefore manufacturing is carried on in many places, though it is best developed in the coal fields. Much coal and iron from England and Scotland are sent by boat across the Irish Sea to the coast of Ireland. Largely for this reason the city of BELFAST is also noted for its iron manufacturing, especially for shipbuilding.

FIG. 466. — Map showing coal distribution in British Isles.

The United Kingdom has many other kinds of manufacturing. Vast quantities of wool, for example, are made into woolen goods. In the mountainous section of northern England, near both coal and wool, there are hundreds of factories for the manufacture of woolen cloth. The principal center of this trade is LEEDS, which also has water power. On the west-

2. Woolen goods

FIG. 467. — A country road in England.

ern side of this hilly region is BRADFORD, noted for its broadcloth and its worsted goods; and neighboring cities manufacture woolen yarn, hosiery, carpets, and blankets. The woolen industry extends northward into Scotland and southward to LEICESTER, where the surrounding plains produce a breed of sheep that yields a wool suitable for the manufacture of worsted yarn.

FIG. 468.—A country village in Ireland, surrounded by pastures and fields of grain.

In spite of the enormous number of sheep in the British Isles, millions of pounds of wool must be imported every year in order to supply the factories. This reminds us of New England, where much of the wool is brought from the West or from foreign countries.

On the western side of northern England we find a great cotton-manufacturing industry. Dampness is one of the points in favor of that section, for in a dry air cotton is in danger of becoming too brittle to spin and weave easily. Another reason why this work is best developed on the western side of the island is the fact that it is nearer the United States, from which so much of the raw cotton comes.

3. Cotton goods

Since cotton will not grow in the British Isles, it is necessary to import all that is used. Much cotton is now obtained from Egypt, India, and other parts of the British Empire; but our Southern States still supply the greatest quantity. The center of the cotton manufacturing is MANCHESTER. What other cities do you find near by? LIVERPOOL, on the western seacoast, about thirty-five miles from Manchester, is the seaport for this region, and is itself a great manufacturing city.

The central portion of Great Britain, including southern Scotland and the two sides of the mountain range of northern England, is the seat of the greatest textile industry in the world. Can you name cities of New England which are likewise engaged in cotton and woolen manufacture (p. 131)?

The industries connected with cotton, wool, and iron have made Great Britain one of the great workshops of the world. The most important is cotton manufacturing; iron ranks next; and wool is third.

Thus we see that here, as in the United States, coal makes possible an enormous manufacturing industry. There is so much coal in Great Britain that, in spite of the forest of chimneys in England and southern Scotland, more coal is produced than is needed at home Therefore large quantities are exported. The home production of raw materials for manufacture, however, is not sufficient. All the cotton, much of the wool, and part of the iron ore must be imported; and in addition vast quantities of food for the workmen.

What has thus far been said applies chiefly to Great Britain. Ireland is quite different from Great Britain in several respects. In the first place, it is mainly a country of farms instead of manufactures (Fig. 468). The mild climate and damp air insure excellent grass throughout the year, and about four fifths of the farm land is in pasture. Therefore, great numbers of cattle, sheep, and horses are raised. As in Great Britain, the principal grain is oats; but barley, wheat, potatoes, and turnips are grown.

Contrast of Ireland with Great Britain

1. In prominence of its agriculture

Unlike Great Britain, Ireland is very barren of minerals. Building stones, such as granite, marble, and sandstone, are found, but there is almost no coal or iron.

2. In mining

There is, however, an abundance of "turf," or peat, which is used as fuel in the homes. Peat is the woody matter and plant remains that accumulate in swamps, or *bogs*. When dug up (Fig. 469) and dried, it makes a fairly good fuel. Since about one twelfth of the surface of Ireland is swamp, there is an abundance of this fuel.

FIG. 469.— A scene in Ireland, showing the digging of peat from the bogs. It comes out of the bog wet, and is then wheeled away and spread out in the sun to dry.

On account of the lack of coal, most of the manufacturing in Ireland is done on the eastern side, where fuel is easily obtained from England or Scotland. At one point the two islands are only thirteen miles apart.

3. In manufacturing

One of the leading manufacturing industries is the spinning and weaving of linen which is made from the inner bark, or *fiber*, of the flax plant. Flax is grown in various parts of the United States, but mainly for the seed, from which linseed oil is obtained for use in mixing paints and in making varnish. In Ireland, however, flax is raised chiefly for its fiber. Some of the manufacturing is done in the homes, and some in the cities. BELFAST is specially noted for its linen factories.

The stem of flax is tall and slender, and a field of it looks somewhat like a field of oats. Instead of being cut, like grain, it is pulled up and left lying upon the ground for some time, exposed to the weather, so that the gummy substance, which holds the woody matter and the fiber together, may decay.

After the fiber has been separated, it is split and combed out and thus prepared for spinning. It is made into thread in much the same way as cotton and wool are, and this is then woven into napkins, tablecloths, and other fabrics. Name other articles made of linen.

A fourth respect in which Ireland differs from

FIG. 470. — London Bridge across the Thames, over which a stream of people and wagons is almost constantly passing.

Great Britain is in its population. Ireland is far less densely peopled, and the number of inhabitants is becoming less. For many years the Irish have been leaving their country, partly because they have been discontented with their lot, especially with the laws made by the English. Since 1847, the number of inhabitants has been reduced from eight millions to four millions and a half. They have sought refuge chiefly in the United States and Canada.

4. In population

The cities of Great Britain most noted for manufacturing have already been mentioned; namely, LEEDS, BRADFORD, MANCHESTER, SHEFFIELD, BIRMINGHAM, and GLASGOW. What industries are developed in each? Tell where each is located.

Principal cities
1. Their location

There are other large cities along the coast; for great quantities of raw materials and food must be imported, and great quantities of manufactured goods must be exported. These seaports are, therefore, the gateways to and from the island. Since Great Britain lies far north, between Europe and the New World, these shipping points are naturally located on the eastern, western, and southern sides. They are situated at those points where the best harbors exist, and not far from the great industrial centers.

The largest of these cities, and in fact the largest city in the world, is London. It is situated fifty miles from the ocean, as far up the Thames River as high tide allows vessels to go. This is a favorable position for a city because it is in the interior of the island,

2. London
(1) *Its location*

FIG. 471. — The famous Westminster Abbey in London.

and yet is connected with foreign countries by water.

Nearly two thousand years ago the Romans built a fort where London now stands. They had a ferry here for crossing the Thames. A bridge, the first London Bridge, was not built until about eight hundred years ago. This gave the city a great start. Since that time, it has grown until Greater London now includes fully 7,300,000 persons. How

(2) *Early history and present size*

sugar, meat, tobacco, hides, and cocoanuts. Railways extend to all parts of Great Britain, so that these goods are easily distributed.

London is the capital of the *British Empire* (Fig. 476), which is the name given to the United Kingdom and its dependencies. It is a center for the publication of books and magazines, and it has noted picture galleries, libraries, museums, and buildings (Figs. 471, 472, and 478).

(4) *Importance in other ways*

Fig. 473. — Shipping in the busy harbor of Glasgow.

does that compare with the number in Scotland? In Ireland? In New York City?

As in all great cities, one of the chief industries is manufacturing. Nearly all kinds of goods are made in London, as in New York, Chicago, and Philadelphia.

(3) *Manufacturing and commerce*

London is the greatest shipping point in the world, being the point of entrance for much of the food for the English. There are docks along the river for a distance of twenty miles, and there are hundreds of great warehouses filled with goods from all climes, including tea, flour,

Its wealth and trade are so great that it has long been the leading money center of the world. The principal bank, called the Bank of England, is the agent of the government in much of its business, and employs about a thousand persons.

Southwest of London, on the coast, is Southampton (Fig. 459), where many ocean steamers from the United States stop. Close to Southampton is Portsmouth, which has a great navy yard. Almost due west of London, near the head of Bristol Chan-

3. Other English cities

(1) *In the south of England*

Fig. 472. — St. Paul's Cathedral, London, from the Thames River.

nel, is BRISTOL. It was formerly next to London in size, but Liverpool has now become a far larger city. Just west of Bristol is CARDIFF, in Wales, the chief port for the export of coal.

The two leading seaports in the north of England are LIVERPOOL, on the west side, and HULL on the east side. Hull has trade chiefly with Europe, but Liverpool trades with America and Africa principally.

(2) *In the north*

4. Cities of Scotland

to London in size among British cities. It is a leading manufacturing center and shipping point, and has a flourishing trade with America.

EDINBURGH (Fig. 474), the capital of Scotland, and one of the most beautiful cities in the British Isles, is quite unlike the other large cities named. It is not important either as a shipping point or as a manufacturing center. In former

FIG. 474. — The city of Edinburgh.

Before the discovery of the New World, the west side of Great Britain had little commerce. With the settlement of America, however, Liverpool grew until it now has an immense trade, and is third in size among the cities of the United Kingdom. Besides its commerce, Liverpool is also important for its shipbuilding. Why is this a favorable place for such an industry? A ship canal, about thirty-five miles long, has been built to MANCHESTER, at an expense of $75,000,000.

GLASGOW (Fig. 473), on the west side of the Lowlands of Scotland, is second

days, before Glasgow had commerce with America, Edinburgh was much more important than Glasgow; for it commanded the eastern entrance to the Lowlands of Scotland. It still has extensive trade, and is a noted educational center. LEITH, a short distance away, is the port for Edinburgh.

Farther north, on the coast, are DUNDEE and ABERDEEN. The former sends a number of whaling vessels to the Arctic Ocean each year, and is also engaged in the manufacture of linen. Aberdeen has many manufacturing industries.

The principal cities of Ireland are on

the east and south sides. What has already been said about BELFAST (p. 344)?

5. Cities of Ireland

DUBLIN (Fig. 475), the capital of Ireland, and the chief port for the English trade, ships farm and other products to England and receives manufactured goods in return. QUEENSTOWN has a fine harbor, and is a port of call for vessels bound from America to Great Britain.

Commerce

Many millions of people are employed in manufacturing and other industries in the British Isles. They produce so much cloth, iron goods, and so many other articles, that the British people cannot possibly use all of them. A market for them must be found in other countries.

On the other hand, it is necessary for the British people to import much of the food that they eat. It is impossible to raise it all on these two small islands, just as it would be impossible to raise enough for the people of a city within the city limits. Besides food they must also import much wool, cotton, and other raw products for manufacturing.

The export of so many goods, and the import of so many others, gives rise to an enormous amount of trade. This makes the transportation of goods of the greatest importance. Partly for these reasons the United Kingdom has more ships than any other nation in the world, and they sail to every important port on the earth.

Having many ships, it has been easy for the British people to explore all parts of the earth. Also, having to sell so many goods abroad, and to buy so much food abroad, it has been natural for the British nation to take possession of newly discovered lands.

British colonies

FIG. 475. — A street scene in Dublin.

In this way the United Kingdom has come into possession of Canada, Australia, India, several large countries in Africa, and scores of islands and smaller possessions (Fig. 476). These are called *colonies*, and the British have more of them than any other nation in the world. You will remember that our own country was an English colony before our War of Independence.

The British colonies are one hundred times as large as the British Isles themselves, and have ten times as many inhabitants. These colonies help greatly to make the United Kingdom a World Power, both by their trade and by their support in times of danger.

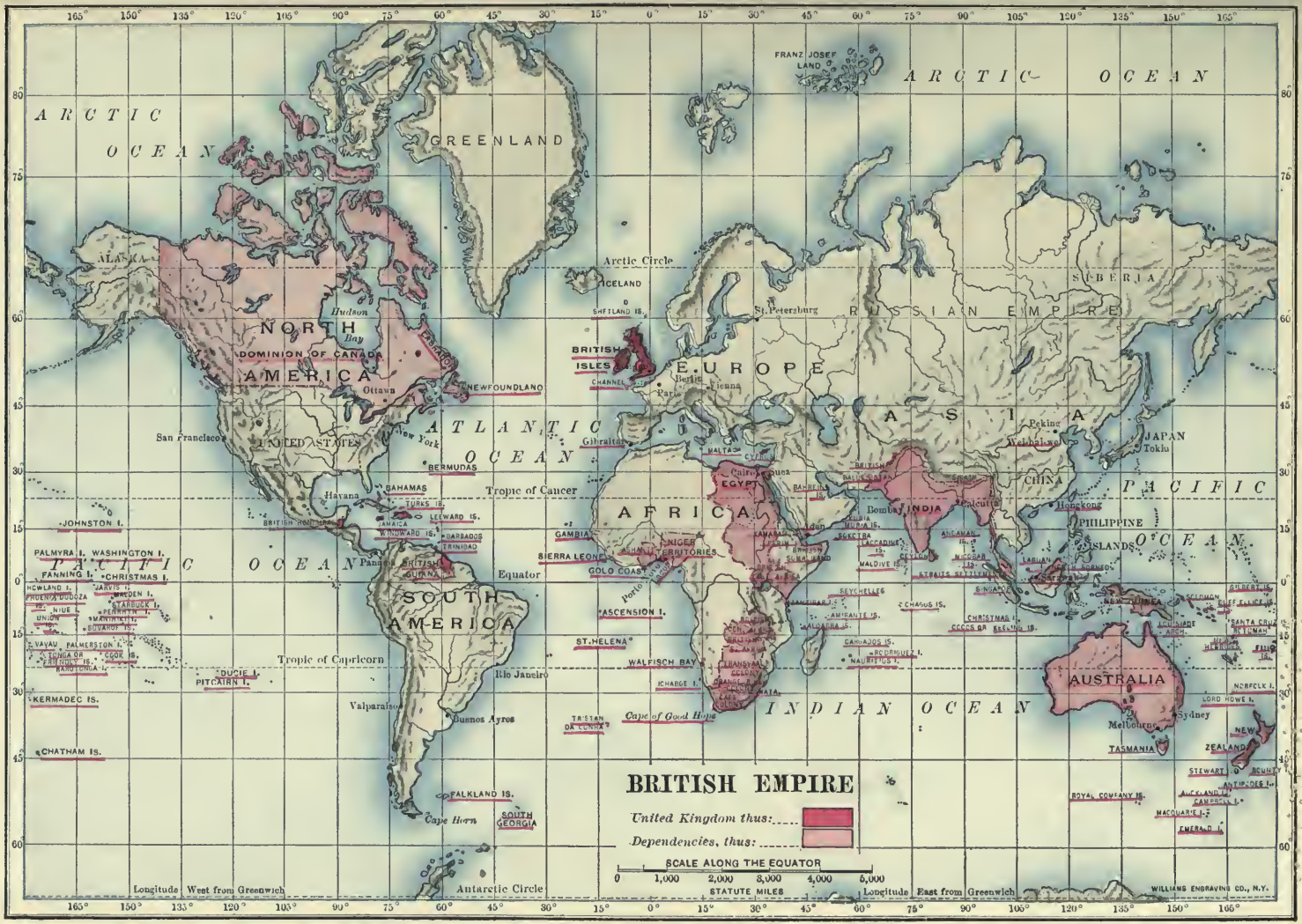

ARCTIC OCEAN
GREENLAND
FRANZ JOSEF LAND
ALASKA
Hudson Bay
NORTH AMERICA
DOMINION OF CANADA
Ottawa
NEWFOUNDLAND
San Francisco
UNITED STATES
New York
BERMUDAS
Havana
BAHAMAS
Tropic of Cancer
JAMAICA
BARBADOS
TRINIDAD
GUIANA
Equator
SOUTH AMERICA
Tropic of Capricorn
Rio Janeiro
Valparaiso
Buenos Ayres
Cape Horn
FALKLAND IS.
SOUTH GEORGIA
PITCAIRN I.
KERMADEC IS.
CHATHAM IS.
JOHNSTON I.
PALMYRA I.
WASHINGTON I.
FANNING I.
CHRISTMAS I.
PACIFIC OCEAN
ATLANTIC OCEAN
Arctic Circle
ICELAND
SHETLAND IS.
BRITISH ISLES
CHANNEL
Berlin
Paris
Vienna
St. Petersburg
RUSSIAN EMPIRE
SIBERIA
EUROPE
ASIA
Peking
Weihaiwei
JAPAN
Tokio
CHINA
Gibraltar
MALTA
Cairo
Suez
EGYPT
AFRICA
Bombay
INDIA
Calcutta
Hongkong
PHILIPPINE ISLANDS
GAMBIA
SIERRA LEONE
GOLD COAST
NIGER TERRITORIES
ASCENSION I.
ST. HELENA
WALFISCH BAY
Cape of Good Hope
INDIAN OCEAN
AUSTRALIA
Melbourne
Sydney
TASMANIA
NEW ZEALAND
LORD HOWE I.
NORFOLK I.
ROYAL COMPANY IS.
Longitude West from Greenwich
Antarctic Circle
Longitude East from Greenwich
BRITISH EMPIRE
United Kingdom thus:
Dependencies, thus:
SCALE ALONG THE EQUATOR
0 1,000 2,000 3,000 4,000 5,000
STATUTE MILES
WILLIAMS ENGRAVING CO., N.Y.

FIG. 476.

Great Britain and Ireland, together with the colonies, form the *British Empire*. Its government, unlike our own, is a monarchy, and the name of the present king is George V (Fig. 477). It is not an absolute monarchy, however, for the people have an important share in making the laws, as in our own country. They elect representatives to *Parliament*, which meets in London (Fig. 478), and corresponds to our Congress at Washington.

The British Empire and its form of government

Fig. 477. — George V, King of England.

There are two bodies forming Parliament, one called the House of Lords, the other the House of Commons. The *House of Lords* is made up of members of the nobility, or men with inherited titles, who are not elected by the people. The *House of Commons*, whose members are elected by popular vote, has far greater power in making laws than the House of Lords.

Fig. 478. — The Parliament building in London, with the Thames River in front.

1. Review Questions

1. Give reasons for regarding the British Isles as our mother country. 2. What are the parts of the United Kingdom? What about their area and population? 3. In what respects is this country especially important? 4. Give two reasons why agriculture is not very prominent. 5. Where is the land hilly? Where are there lowlands? 6. Name the main farm products. 7. Tell about the raising of live stock on these islands. 8. What about lumber and fishing? 9. What important minerals are found? 10. What can you tell about iron and steel manufacturing? 11. Woolen goods? 12. Cotton goods? 13. How does Ireland compare with Great Britain in prominence of agriculture? What are the farm products of Ireland? 14. How does Ireland contrast with Great Britain in mining? 15. In manufacturing? Describe the chief manufacturing industry. 16. What about the population of Ireland? 17. Where are the principal cities of the British Isles located? 18. Tell further about the location of London. 19 Its early history and present size. 20. Its manufacturing and commerce. 21. Its importance in other ways. 22. Locate and state the important facts about other cities in the south of England. 23. In the north. 24. Tell about the leading cities of Scotland. 25. Of Ireland. 26. Why have these islands so much commerce? 27. Why have they so many colonies? 28. Locate the principal colonies. 29. What is meant by the British Empire, and what is its form of government?

2. Suggestions

1. Name some early English explorers who took part in the exploration of North America. 2. What names of British cities have you met in your study of the United States? In what portions of the United States are they? 3. What books have you read whose authors lived in the British Isles? 4. What are the people from each of the four parts of these islands called? 5. What waters surround the British Isles? 6. Make a sketch of the British Isles, putting in the chief cities. 7. Suppose that you are now in London; point to Wales, Scotland, Ireland, the United States.

2. German Empire (Fig. 479)

Map study

1. Compare the latitude of Berlin with that of New York (Fig. 107). 2. Of London (Fig. 450). 3. Estimate the greatest length of Germany from east to west (Fig. 479); from north to south. 4. How does Germany compare in size with the British Isles? 5. With Texas? 6. What parts of the boundary are natural? 7. Name and trace the principal rivers. 8. Point out the mountainous sections. 9. What facts do you notice about the coast line? 10. Which probably has the better seaports, the North Sea or the Baltic Sea? Why?

Rank among the World Powers

In industry, in commerce, and in other ways Germany is one of the leading nations of the world, ranking among the first three of the World Powers. The two others that rival or surpass Germany are the United States and the United Kingdom.

States forming the Empire

Germany has reached this high rank only very recently. For until the year 1871 the region marked German Empire on the map was divided into many parts more or less independent of one another, and often at war with one another. In 1871, just after a war with France, these different parts were united to form the German Empire, which is now made up of twenty-six states. The smallest of these is the Free Town of Bremen, which contains only ninety-nine square miles. How does Bremen compare with Rhode Island in area? By far the largest state is Prussia, which includes more than half the empire. It is, however, smaller than our own state of Montana.

Form of government

These states are united under a central authority, more closely than our states. Instead of a President they have an Emperor, called the *Kaiser*, who, according to law, must be the King of Prussia. As in the United Kingdom, the power of the Kaiser is limited, for there is a legislature with


GERMAN EMPIRE
THE NETHERLANDS
AND
BELGIUM
Scale of Miles
0 25 50 100 150
Cities with over 2,000,000 BERLIN
Cities with 500,000 to 800,000 Hamburg
Cities with 200,000 to 500,000 Cologne
Cities with 100,000 to 200,000 Dortmund
Smaller Places Lübeck
Capitals with less than 100,000 LUXEMBURG
Capitals
Other Cities
Williams Engraving Co., N.Y.
Longitude East from Greenwich
NORTH SEA
BALTIC SEA
GERMAN EMPIRE
AUSTRIA
HUNGARY
FRANCE
BELGIUM
NETHERLANDS
DENMARK
SWEDEN
SWITZERLAND
LUXEMBURG
BERLIN
Hamburg
Cologne
Munich
Dresden
Leipzig
Breslau
Königsberg
Danzig
Stettin
Warsaw
Prague
VIENNA
Amsterdam
Brussels
Copenhagen

FIG. 479.

two houses, one called the *Reichstag*, which is elected by the people. The form of government is, therefore, a limited monarchy. The present Kaiser is Emperor William II (Fig. 480).

Germany contains two hundred and nine thousand square miles, being twice the size of Colorado, though much smaller than Texas. It has more than sixty million inhabitants, or about two thirds as many as the entire United States.

Area and population

The position of the German Empire is very different from that of Great Britain. Only about one third of its boundary is water, while seven independent countries, besides Luxemburg (Fig. 479), are on its borders. What are their names?

Position of country

1. Advantages of the position

FIG. 480. — William II, the Emperor of Germany.

The location of the British Isles is favorable for world commerce, because densely populated Europe lies on one side, and the New World on the other. Germany is the most centrally situated of the European countries, and therefore can easily trade with all parts of the continent. Further, two of her principal ports, HAMBURG and BREMEN, face Great Britain and the New World. Name some of the large European cities (Fig. 450) that can be quickly reached from Germany. In these days of railways, Germany's central position is superior to that of England for European trade.

On the other hand, there are serious disadvantages in this position, for the many near neighbors have caused much trouble. Notice what an irregular boundary Germany has. Mountains form a part of the southern border, and water the northern; but the eastern and western limits have been largely decided as a result of war with neighbors. That is why the boundary is so irregular and so artificial. Draw an outline map of Germany.

2. Its disadvantages

In order to keep the present boundaries the Germans must be prepared to defend them at any time. This need calls many citizens to an occupation that has not thus far been considered in this book; namely that of *preparing for war*. Each of the great European nations is ever watching the others; and since no one of them knows how soon a dispute may arise with its neighbor, each keeps a large and thoroughly prepared army and navy.

Able-bodied young men in Germany are required usually to devote two full years, and parts of several following years, to active train-

ing as soldiers. Most of them enter the service at about the age of twenty; and since half a million men reach that age every year, you can get some idea of what such training costs.

Strong forts are built near the boundary, as at Cologne, Metz, and Strassburg on the French side, and Königsburg and Posen near Russia. Forts are also numerous at the seaports, in the neighborhood of the great interior cities along the rivers, and at other important points. The United Kingdom, being surrounded by water, depends mainly upon a navy for defense Germany also is building a great navy as well as training a mighty army. Preparation for war is one of the great occupations of Europe to-day, and no nation is giving more attention to it than Germany.

Fig. 481. — A view on the low level plain of north Germany.

Agriculture is much more important in Germany than in the British Isles. This is due partly to the fact that there is in Germany a very large amount of land suited to farming. Even in the south, where there are mountains, there are many fertile valleys. Central Germany is a low, hilly plateau with low mountains rising above it in a few places. There is much good farming land in this section; and there is still more in northern Germany which is almost wholly a lowland (Fig. 481), very low and flat near Holland and gently rolling in other parts. This is a part of the great plain of northern Europe, already mentioned (p. 333).

Why more agriculture than in England

1. Amount of good farm land

Fig. 482. — Vineyards on the steep slope of the Rhine Valley near Bingen. The land is terraced here and the small patches of vineyard are inclosed within walls of rock.

The climate also is more favorable to agriculture. A large portion of the Empire is south of the southern portion of England, and no part extends so far north as northern England.

2. Climate

In addition, Germany is less under the influence of the ocean, so that the summer climate is warmer than

FIG. 483. — German peasants carrying grapes from a vineyard.

that of Great Britain. This allows several important crops to be raised in Germany that cannot be grown in the United Kingdom. There is plenty of rain in all parts of Germany, as there is in the British Isles.

3. Farm crops

Among the chief farm products are the grains, — rye, oats, barley, and wheat. Far more rye is raised than wheat, and rye flour, used in making "black bread," is a common food of the German people. Almost no corn is grown, partly because the Germans have not learned to use this grain and partly because in most parts the summers are not hot enough, although they are warmer than in England. Grapes and tobacco, neither of which can be produced in Great Britain, are raised in large quantities (Figs. 482, 483). Potatoes, which were introduced into Europe from America, are a very valuable crop, forming one of the chief foods of the people.

The Germans have so improved the beet as to produce a new kind, known as the *sugar beet*, from which sugar is made. Hops, used in the manufacture of beer, are cultivated extensively, and great quantities of hay also are raised.

FIG. 484. — A view in the Black Forest, one of the low mountain regions of southern Germany.

Much of the lowland is too sandy for cultivation, and much of the highland is too rugged.

4. Live stock

A large part of such land is used for pasturage, and thus one sixth of the surface is natural pasture. Cattle for beef and for dairy purposes are kept in nearly all parts of the empire, but especially in the damper climate near the sea. Largely because wool can be imported so cheaply, the raising of sheep in Germany is a much less important industry. Swine raising, on the other hand, is increasing because of the cheap feed supplied by the refuse from the beet-sugar factories. Horses are raised in all parts of the empire, and many goats are kept, especially in the mountains.

Fishing

Along the coast, especially in the North Sea, there is much fishing; but it is the least important among the prominent industries.

Extent of forests, and their care

There is much more forest land in Germany than in Great Britain, about one fourth of the empire being wooded. These trees are grown on lands that are not suited to farming or pasturage (Fig. 484). They are found especially on the sandy plains of the northern lowland, and in the mountainous sections of central and southern Germany (Fig. 484).

The good sense of the German people is well shown by the way they treat their woodlands. Instead of wastefully destroying them by fire and the ax, — as has been done in so many parts of our country, — the Germans have developed an excellent system of forest culture. Trees are planted in place of those that are cut for timber, and they are given proper care, so that the woods continue to be abundant. In this way the forest is made to yield a profit every year, just as a farm does. Germany produces a large part of the lumber she uses, and also exports a large amount. She exports also many valuable products manufactured from the forest trees.

It is partly the example of the Germans that has led our own country, at last, to begin to pay attention to the care of our forests.

Mining

Next to the United Kingdom, Germany is the greatest mining country in Europe, although each is far behind the United States in this industry. In the western part of Germany, in the neighborhood of COLOGNE and AACHEN, coal is abundant; and from this section eastward to the Russian border there are several important coal fields. As in our own country and in England, there is valuable iron ore, some of it near the coal mines.

FIG. 485. — Storks in Strassburg, where they build their nests on the chimney tops.

Among the other valuable mineral products are lead, copper, silver, zinc, and salt. Nearly half the silver mined in Europe comes from Germany; and Belgium and Germany together produce more zinc than all the rest of the world. There are immense salt mines at STASSFURT, and there are valuable clays, cement materials, and building stones.

MAP OF THE WORLD
showing possessions of
UNITED STATES, GERMANY, FRANCE
and THE NETHERLANDS

United States — *France*
Germany — *The Netherlands*

FIG. 487.

The Germans make use of the most scientific methods in their mining work; and other nations have learned from them many of the methods used in reducing ores to metal.

With abundant coal, iron ore, and other raw materials, Germany has become a great manufacturing country. Among European nations Germany ranks next to the United Kingdom in manufacturing.

Manufacturing

The position of the coal and iron mines accounts for the location of the principal centers for iron manufacturing. The busiest section is along the Rhine, in the vicinity of COLOGNE; and this region may well be compared with northern England in the extent of its industries. A second center is the vicinity of DRESDEN and CHEMNITZ; and a third is at BRESLAU in the southeastern corner of the empire.

1. Leading centers of manufacturing

FIG. 486. — A German peasant girl spinning wool.

The map (Fig. 479) shows no cities south of BRESLAU; yet this is a busy manufacturing region. Cities are lacking here because the people carry on the manufacturing mainly in their own homes, instead of in factories. Therefore, although villages stretch for miles along the valleys, there are no large towns.

The textile industries are best developed near the coal fields. Therefore the sections mentioned above are noted for cotton, woolen, and silk factories, as well as for iron. All the cotton and silk, and much of the wool, for these textile industries comes from abroad.

2. Leading kinds of manufacturing

(1) *Textile and iron goods*

The extensive forests partly account for a third occupation in many sections; namely, the manufacture of furniture, paper, and other materials made of wood. Wood carving is an important industry in the Black Forest and other parts of Germany.

(2) *Lumber and lumber products*

The manufacture of spirituous liquors is another prominent German industry. A portion of the immense potato crop, and some of the beets, are made into spirits. But beer, in the manufacture of which barley and hops are used, is made in much greater quantities. From the grapes of southern Germany much wine is produced.

(3) *Beverages*

Germany is also a great sugar-manufacturing nation. Until a few years ago nearly all sugar was obtained from sugar cane; but this was changed when the Germans found a means of making sugar from beets. This industry has now spread to many countries, including the United States.

(4) *Beet sugar*

Commerce

Because of its extensive agriculture and its forests, Germany is far more independent in regard to materials for food, clothing, and shelter than is Great Britain. Yet, like Great Britain, Germany has a very

dense population, and some of the things that she greatly needs cannot be raised at home. All of the cotton, much of the wool, and much food, especially meat and grain, must be imported. What countries that you have studied might send these articles to Germany?

Germany exports a great amount of sugar, wine, beer, textile goods, and iron and steel goods. Like the United Kingdom, Germany has important colonies (Fig. 487), although they are not nearly so extensive as those of the British. Her trade with these colonies, which are mainly in Africa, is of considerable value; but commerce with other countries is far more important.

For transportation of goods from one part of the Empire to another, Germany is greatly favored by her rivers. From the map, you will see that most of them flow northward. What rivers do you find? Trace their courses. Navigation is possible upon all of these, but it is most extensive on the Rhine (Fig. 492). Boats can ascend this stream all the way from the sea to the boundary of Switzerland. How far is that? The Elbe is navigable into Austria. You can see how very valuable these rivers must be in carrying goods across the Empire. There are also many canals and railroads which extend to all parts of Germany and to other parts of Europe.

Great centers of population

1. Berlin

(1) *Its location*

The capital and the largest city in Germany is BERLIN, situated on the small Spree River on the North German plain, midway between the coast and the highlands. This position may not at first seem a very favorable one. However, the Oder, a large river, and some of the tributaries of the Elbe, approach so near each other in this section that they have been connected by canal. Thus, Berlin has water connection with both HAMBURG and STETTIN, two important seaports, and with all parts of these two river systems. This is a very important aid in bringing fuel, food, and raw materials for manufacture, and in taking away manufactured articles.

Berlin also lies on the direct route from Hamburg to Breslau, and from Stettin to Leipzig; and other large cities surround it. It is, moreover, on the route of several of the chief European railways, and is therefore one of the leading railway centers of the continent.

With such excellent connections, by water and by rail, Berlin, besides being the capital of the empire, has become one of its principal manufacturing cities. Fully half the residents are supported by manufac-

(2) *Its importance*

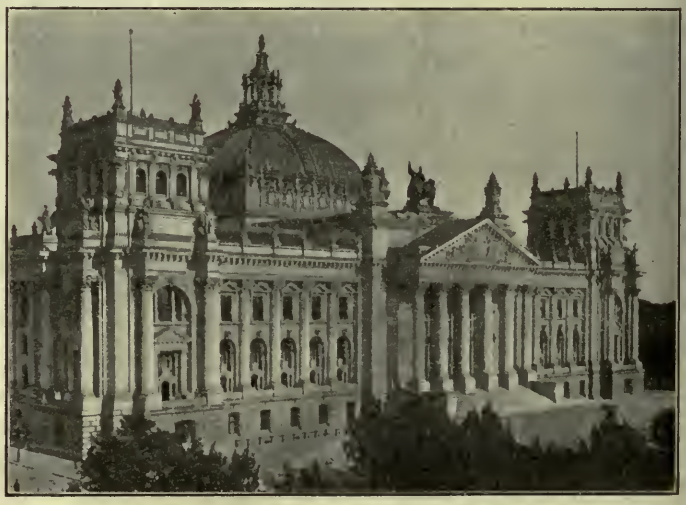


FIG. 488. — The Building in Berlin where the German Parliament meets.

turing. Berlin is the center of German banking. It is noted for its art and music, and for its great university, the largest in the empire. It is a beautiful city, with many palaces, parks and fine public buildings (Fig. 488). There are several suburbs, among them POTSDAM, which has royal palaces.

Among the cities not far from Berlin is LEIPZIG, the fifth largest in the empire. Formerly it was at the crossing of important wagon roads, and now it has become a railway center. Leipzig is, next to Berlin, the most important trade center of Germany. One of its leading articles of commerce is fur. It is also a center for the German book trade.

2. Interior cities near Berlin
(1) *Leipzig*

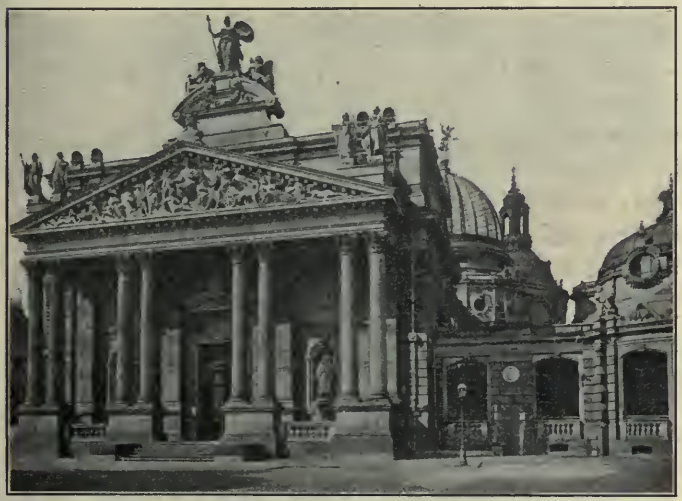


FIG. 489. — The Dresden Art Museum which contains many treasures of art.

DRESDEN, southeast of Leipzig, is noted for its art museum (Fig. 489), in which there are many wonderful paintings. The beautiful Dresden china is made in this vicinity, and there is much other manufacturing; for Dresden is situated on the navigable Elbe and has coal near at hand. It is, moreover, the capital of SAXONY, the most densely settled German state.

(2) *Dresden*

CHEMNITZ, near by, has important textile industries. HALLE and MAGDEBURG, farther to the northwest, and in the center of the chief beet growing section, are extensively engaged in the manufacture of sugar.

(3) *Chemnitz, Halle, and Magdeburg*

BRESLAU, a city not much smaller than Leipzig, is on the Oder, a navigable river. It has the advantage of being near a very rich coal and iron field, and is, therefore, a great manufacturing center. Its location, near the Russian frontier, makes it an important market for eastern and central Europe.

(4) *Breslau*

On the plateau of southern Germany is MUNICH, the capital of the kingdom of BAVARIA. Although so far south, and so distant from coal, Munich is the third city in size in the empire. It is on the trade routes from Germany to Italy and Austria, and is therefore an important railway center. Much of its renown is due to its art collections and its art industries, such as work in bronze, gold, silver, glass painting, and porcelain manufacturing.

3. Munich and Nuremberg

North of Munich, on the road to Berlin, is NUREMBERG. This quaint city was famous in former centuries for its art and architecture, and many of its treasures are still carefully preserved. At present it is an important center for the manufacture of toys.

HAMBURG is the second city in Ger-

4. Seaports

many and the most important seaport on the continent. Name some articles from the United States that probably enter this port.

Bremen and Stettin also admit large vessels, and are the chief rivals of Hamburg; but they together have less than one half as much commerce as Hamburg. In what respects is the situation of Hamburg more favorable to commerce than that of Stettin? Name other Baltic ports besides Stettin. Estimate the distance saved to the Baltic ports by the cutting of the Kaiser Wilhelm Canal, south of Denmark, which is sixty-one miles in length. What city is at the eastern end of this canal?

5. Cities along the Rhine River

(1) *Cologne and vicinity*

On ascending the Rhine into Germany we come to the greatest manufacturing region of the empire. What cities are found there? Cologne, the largest, with a population of nearly a half million, is on the river bank. It is a great shipping point, since railways cross the river here, and boats from London and other places are able to ascend to this point.

Near Cologne are Elberfeld and Barmen, which have textile manufactories; Essen, which is famous for its steel works; Krefeld, which is an important silk-manufacturing town; and Aachen (Aix-la-Chapelle in French) which manufactures woolen cloth.

(2) *Frankfurt*

Just beyond the chief bend in the Rhine is Frankfurt, on a navigable tributary, the Main. The easiest route from the Rhine Valley to the Danube lies along this tributary; and the railway from the German plain to the upper Rhine passes Frankfurt. This city is therefore a center of important trade routes. For this reason it is one of the chief trading and banking centers in Germany.

The Rhine and the Hudson compared

1. In scenery

The Rhine, the most important river in Germany, is often compared with the Hudson. In both rivers there are sections that are shut in by high, rocky cliffs, well wooded to the top. The Rhine, however, is much narrower than the Hudson, so that these walls

Fig. 490. — The Cologne Cathedral, one of the most famous churches in Europe.

seem loftier; and since the stream is more winding, at some points they stand out more boldly, as if in the very path of boats, to bar their further progress.

When one journeys along the more beautiful portion of the Rhine, a fine old castle often comes into view, as a turn in the river reveals an especially bold cliff (Fig. 492). Sometimes

FIG. 491. — Some of the quaint houses in the ancient city of Frankfurt.

several such relics of the past may be seen from a single point on the river. Many of these are in ruins, but now and then one is seen that is still kept up as a residence. The Hudson lacks such castles, although there are many fine residences along its lower course.

FIG. 492. — The Rhine River in Germany. Notice the castle perched on the hilltop on the left, and the vineyard in the front of the picture.

There are many terraced vineyards on the sloping hillsides bordering the Rhine (Fig. 482), and likewise many a quaint village built on a narrow strip of flood plain between the river and the cliff (Fig. 492). Since the Rhine has more large tributaries than the Hudson, there are more wild glens on the sides, and more broad, wooded valleys, which open up charming views from the river. The openings in the valley walls, where these tributaries enter, are favorite sites for towns.

The Rhine, like the Hudson, is a busy highway of commerce. Vessels are going at all times, heavily

laden with merchandise. It is even more busy than the Hudson. It is more densely populated too, with cities, towns, and villages all along its banks. There is, however, no such vast population at its mouth as is found at New York City. What is the name of the city at the mouth of the Rhine?

2. In commerce and population

1. What is the rank of Germany among the world powers? 2. State some facts about its form of government. Also about the number of German states, and their size. 3. What is the area of Germany? 4. The population? 5. How is the position of the country of advantage? 6. Explain some of the disadvantages of the position. 7. What can you say about the amount of good farm land? 8. About the climate? 9. Name the principal farm crops. 10. The main kinds of live stock. 11. What portions of the empire are covered with forest? What care is given to these forests? 12. Tell about the mining. 13. Name and locate the leading manufacturing centers. 14. Name the principal kinds of manufacturing, and state some facts about each. 15. Name Germany's chief imports and exports, giving reasons. 16. How is transportation within the empire provided for? 17. Give the leading facts about Berlin. 18. Leipzig. 19. Dresden. 20. Other interior cities near Berlin. 21. Munich and Nuremberg. 22. The seaports. 23. Cities along the Rhine River. 24. Compare the Rhine with the Hudson in scenery. 25. In commerce and population.

1. Review Questions

1. Find in an atlas in what parts of the empire the larger states, such as Prussia, Bavaria, Saxony, etc., are situated. 2. People often assert that the peace of Europe is preserved by careful preparation for war; in what sense can this be true? 3. What must be some of the benefits of two years of active training in the army, aside from preparation for war? What are some of the disadvantages? What relation has this had to emigration? 4. What is the size of our standing army? Why so small? 5. What seaports of Europe most nearly approach Hamburg in size? 6. How might the Kaiser Wilhelm Canal possibly prove an injury to Hamburg? 7. Find out something about Goethe; Schiller; Humboldt; Emperor William the First; Bismarck; Von Moltke; Wagner; Schumann. 8. Make a collection of photographs from Germany. 9. Make a drawing of Germany, including the principal rivers and cities. 10. Write the names of the countries on its boundary.

2. Suggestions

3. France (Fig. 493)

1. France is the nearest country to the British Isles. Estimate the distance between the two (Fig. 493). 2. Compare the two countries as to area. 3. As to population. 4. What countries border France? 5. What waters? 6. In what respects is its position favorable to commerce? 7. What do you observe about the general direction of the rivers? Name them. 8. Locate the island of Corsica, which belongs to France.

Map study

France is one of the few nations in Europe that has a republican form of government, the others being Portugal and Switzerland. For many centuries it was a monarchy, and one of the former emperors was Napoleon Bonaparte; but now the people elect a president and representatives, as we do in our country. The President of the Republic at the present time is Armand Fallières (Fig. 494).

Its form of government

France has natural boundaries on most sides, as you see by the map. The country is inclosed on two sides by the sea, and on the other sides, in large part, by mountains. Notice how completely the Pyrenees separate France and Spain; and what a barrier the lofty Alps form along the Italian and Swiss borders. Even north of the Alps, a part of the boundary is formed by highlands.

Its boundaries

It is natural that an independent country, with a separate language,


WESTERN EUROPE
Scale of Miles
0 50 100 200 300
Cities with over 1,000,000 London
Cities with 200,000 to 1,000,000 Lisbon
Cities with 100,000 to 200,000 Seville
Smaller places Coimbra
Capitals with less than 100,000 BERNE
Capitals of Countries
Other Cities
SCOTLAND
IRELAND
GREAT BRITAIN
ENGLAND
WALES
NORTH SEA
ATLANTIC OCEAN
ENGLISH CHANNEL
NETHERLANDS (HOLLAND)
BELGIUM
DENMARK
GERMAN EMPIRE
FRANCE
SWITZERLAND
ITALY
SPAIN
PORTUGAL
MEDITERRANEAN SEA
AFRICA
CORSICA (To France)
SARDINIA (To Italy)
BALEARIC ISLES
Gulf of Lyon
CANTABRIAN MTS
PYRENEES
SIERRA NEVADA
THE ALPS
Monts d'Auvergne
ALGIERS
Strait of Gibraltar
Gibraltar (Brit.)
Longitude West from Greenwich
Longitude East from Greenwich
Williams Engraving Co., N.Y.

FIG. 493.

FIG. 494. — Armand Fallières, President of France.

should develop in a region so well inclosed by natural boundaries. But here, as in other parts of Europe, there were many separate kingdoms centuries ago. All these are now united under one government excepting three small sections. These are MONACO, ANDORRA and LUXEMBURG.

MONACO, in the southeast, is a small principality only eight square miles in area. ANDORRA is a small state in the Pyrenees. LUXEMBURG is a small duchy on the German border. Agriculture, iron mining and manufacturing are its principal industries. It is governed by a grand duke and a parliament.

The chief highlands of France are in the south and southeast. Among these the loftiest are the Alps, whose highest peak, Mont Blanc (15,781 feet), is in France. There is also a low plateau in southern France, but fully three fourths of the country is a plain, sloping westward from the highlands of the south and east. All but one of the large rivers rise in these highlands, and flow gently across the plain to the Atlantic. Thus navigation is possible far into the country. Locate and name the four largest rivers. How does the Rhone differ from the other three?

Surface features

Since there are no mountains on the west to cut off the vapor-bearing winds from the ocean, there is ample rainfall for agriculture in all parts of France. The summer climate is warmer than that of England because France lies farther south, and is less under the influence of the ocean. The southeastern section, although it lies as far north as Boston, has a semi-tropical climate

Climate

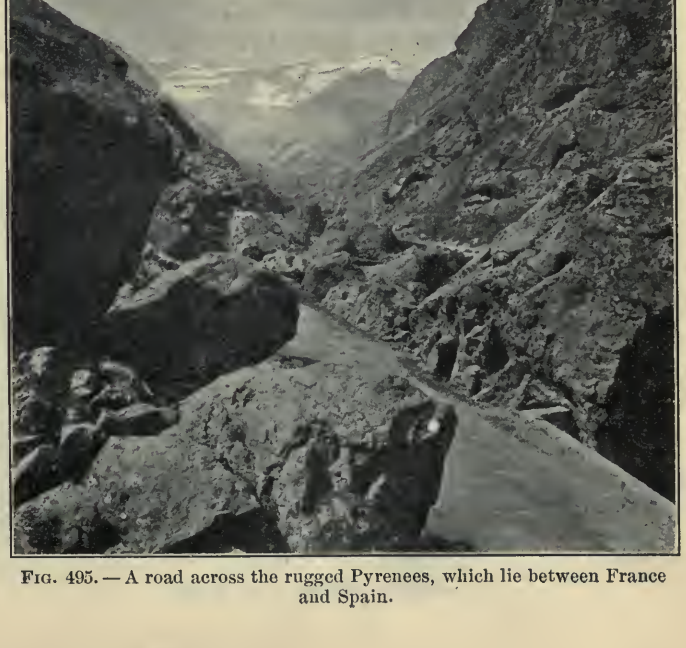


FIG. 495. — A road across the rugged Pyrenees, which lie between France and Spain.

(Fig. 496). This is because of the influence of the warm Mediterranean waters, and the protection from cold north winds which the mountains give.

Fig. 496. — A view in Nice showing the semi-tropical foliage of southern France.

With so favorable a climate, and so much level land, France has naturally become a farming country. Nearly half the people are engaged in agriculture. The same grains are raised as in England. What are they (p. 340)? Wheat is the most important, and more of this grain is produced than in any other European country excepting Russia. Yet France raises only about half as much wheat as the United States, and not nearly enough for the needs of her people.

Agriculture

1. Crops

Grapes, not cultivated in the British Isles, thrive in the warmer climate of central and southern France. This fruit is the most valuable of all French crops, and more grapes are grown in France than in any other country of the world. In the Rhone Valley, and on the warm Mediterranean coast, there are groves of olive, orange, lemon, and mulberry trees. The leaves of the latter furnish food for the silkworm (p. 363).

Fig. 497. — A scene in a wheat field in central France. Notice that the women, as well as the men, work in the field.

2. Live stock

As in England and other countries, the highlands are unsuited to cultivation, and are in large part given over to grazing. As in England, too, there are broad tracks of lowland that are used for pasture. These facts explain why there are in France more than fourteen million cattle and eighteen million sheep, besides large numbers of horses, swine, and goats.

Neither lumbering nor fishing is of very great importance in France.

Yet, as in Germany, the French carry on forestry on the poorer lands. There is some fishing along the coast, and many vessels go to the fishing banks of the North Sea.

Lumbering and fishing

There is some coal, especially near the boundary of Belgium, but France has no such important coal beds as are found both in Germany and in England. It is necessary, therefore, to import coal from Germany, Belgium, and Great Britain. Neither is there so much iron ore in France as in these other countries, although there is some. Fine clays for porcelain are found in central France, and building stones are quarried in many places.

Mining

In spite of the limited supply of fuel, France is a great manufacturing nation. It leads in the production of silk and wine, and there is extensive manufacturing of metal, cotton, and woolen goods. One reason for these manufactures is the fact that coal is easily obtained, either in France or from the neighboring countries of Belgium, Germany, and England.

Manufacturing

1. Why very extensive

Another reason is the nature of the people themselves. Frenchmen have very artistic tastes. On this account the French have given much attention to the manufacture of the finer kinds of goods. Some of them are so fine that they are easily sold to the people of other countries. This has had great influence upon both the kind and amount of their manufactures.

The northern part of France, including LILLE, ROUBAIX, and REIMS, as well as cities near the mouth of the Seine, is the section especially noted for the woolen industry. Here coal is most easily obtained; and large numbers of sheep are raised near by, while foreign wool is imported from Argentina and Australia. Remembering that the hosiery, carpets, underclothing, and other goods are of high grade, and such as wealthy people use, we see that this location, between the two wealthiest capitals of the world, is especially favorable. Next to silk goods, woolen cloths form the most important French export to Great Britain.

2. Leading kinds

(1) Woolen and cotton manufacturing

There is also much cotton manufacturing near the coal fields of northern France. An important reason for this industry here is the ease with which American cotton may be imported; and this explains why ROUEN, on the Seine, is the center for cotton goods. There are other cotton factories in the highlands of eastern France, where water power is used instead of steam power.

Because the climate and soil of the Rhone Valley are favorable to the growth of the mulberry tree, and because coal mines are near, this valley is famous for the manufacture of silk. LYON is the chief center, but ST. ETIENNE and PARIS are also noted for this industry. Some of this manufacturing is done in large factories, some in the homes of the workmen where hand and foot power are used in place of steam.

(2) Silk manufacturing

The traveler in the Rhone Valley sees grove after grove of mulberry trees, carefully tended in order to supply an abundance of leaves for the silkworm to eat in summer. The silkworm moth, at the end of the caterpillar stage, weaves a cocoon about itself (Fig. 498). The material of which the cocoon is made is a thread, about two miles in length, which must be carefully unwound. The single thread is so very fine that, in order to make a fiber strong enough for spinning and weaving, it must first be united with several others.

Since the worms are reared under cover, the silk industry may be carried on in any climate in which the mulberry tree will grow. It is possible, therefore, to produce raw silk in many parts of the world; but feeding the worms and taking the silk from cocoons require much labor, care, and skill. On that account silk production is carried on chiefly in those parts of the world where laborers will accept low wages. China produces the greatest amount of raw silk; but France, in the midst of Europe, where the market for silk goods is greatest, also produces a large quantity. It is the leading country for the manufacture of silk. Make a list of articles made from silk.

FIG. 498. — Piles of silkworm cocoons ready to be unwound.

(3) *Other manufacturing*

The extensive cultivation of grapes has been mentioned. Great quantities of wine, for export or for use at home, are made from the grapes grown in France. In that country nearly every one drinks wine at his meals, or wine mixed with water.

The manufacture of steel goods is important in some places, but to no such extent as in Great Britain and Germany. A great many different kinds of manufacturing are carried on in the cities of France, as in other countries.

Commerce

France exports large quantities of textile goods, wine, and leather goods. She imports coal, iron, wool, cotton, raw silk, and many articles of food. Thus she has a very extensive commerce with foreign countries.

The republic has a number of colonies (Fig. 487) with which she carries on extensive trade.

The most important of these are in Africa, as follows: (1) Algeria and Tunis, across the Mediterranean; (2) a vast area south of these countries, including a large part of the Sahara Desert, the Sudan, the upper Niger, and the country north of the Kongo River; and (3) the large island of Madagascar, east of southern Africa. France also holds a part of Indo China and a very small bit of India, besides islands in different parts of the world.

FIG. 499. — Notre Dame Cathedral, one of the most famous buildings in Paris. General view from the river.

For the transportation of goods across the seas, France

has the advantage of facing both the Atlantic Ocean and the Mediterranean Sea; and there are good seaports on both coasts. What ports do you find on the map? What rivers connect these ports with the interior? Trace each. Boats pass freely up these rivers, except the Loire, which is too shallow for navigation.

It proved to be a favorable site for the growth of a great city, for it is in the midst of a very fertile region, and not far distant from several other densely settled countries. There are excellent means of transportation to the surrounding country by river, canal, and railway. The Seine leads to the sea,

FIG. 500. — A view along the finest street of Paris.

Principal cities

1. Paris

PARIS, the capital of France, is the largest city on the continent of Europe, and the third largest in the world. It has more than 2,700,000 inhabitants.

(1) Importance of its location

Paris is situated on the Seine at a point where there is a small island in the river. In early days this island was easily defended, and it was easy to cross the river here. So the people built a town here which later grew to be a large city.

and is also navigable far inland, and canals give water connection with the Loire, Seine, and Rhine.

(2) Its importance as an art center

Napoleon and other rulers collected art treasures from various nations, and founded museums and schools that have made Paris famous. For this reason large numbers of Americans go to Paris every year to study art. One of the old palaces, known as the *Louvre*, is the most noted art gallery in the world.

It contains thousands of wonderful works of art.

Among the many interesting suburbs of Paris is VERSAILLES, where there is another palace that was built in the days of kings. It is now used mainly as a museum, and scores of the large rooms are decorated with the finest of paintings. It is among such treasures that students of art spend much of their time.

and both this and the Limoges ware, manufactured at LIMOGES, are celebrated for their beauty.

Although so far inland, Paris ships more goods by water than any other French city. The extensive system of canals, by which the country is crossed in all directions,

(4) *Its commerce*

FIG. 501. — A view in Paris showing the broad streets and parks.

It is not strange, therefore, that Paris should be noted, the world over, for its beauty as a city (Fig. 500). The wide streets, the beautiful parks with their fountains and statues, and the fine public buildings and old royal palaces are wonderfully attractive. Even the dwelling houses are in good taste, for it is required by law that new buildings be so planned as to be in keeping with those near by. Therefore one seldom sees an unattractive building in Paris.

Like other great cities, Paris has many manufacturing industries. The people have paid special attention to the manufacture of articles which combine usefulness with beauty, such as jewelry, furniture, gloves, and fashionable shoes. The Sèvres porcelain is made in the suburbs of Paris;

(3) *Its manufactures*

have already been mentioned. Vast sums have been spent in dredging the lower Seine, so that small vessels can proceed directly to Paris. Larger ships transfer their goods to trains, or smaller boats, at HAVRE and ROUEN.

HAVRE, one of the two busiest French ports, has an extensive trade in coffee from Brazil, and in wheat and other materials from the United States. Farther to the northeast is BOULOGNE, where some of the steamships from America stop; and not far distant is CALAIS, the nearest port to England, where boats cross the Strait of Dover to England.

2. Other cities

(1) *Havre, Boulogne, and Calais*

(2) *Bordeaux and Lyon*

Bordeaux, on the Garonne River (Fig. 502), in the midst of a fertile grape-raising district, is the chief port for the export of French wines. Locate the manufacturing cities previously named (p. 363), and tell for what each is important. Note

Fig. 502. — A part of Bordeaux and the Garonne River.

especially Lyon, the center of the silk industry, which is the third city in size in France.

(3) *Marseille*

The leading seaport of France, and the second city in size, is Marseille. It is on the Mediterranean near the mouth of the Rhone. The delta of the Rhone is too marshy for a city, and Marseille occupies the nearest point where there is a good harbor and high ground. It has especially important trade with the countries bordering the Mediterranean, including the French colonies of Algeria and Tunis, in northern Africa.

Review Questions

1. What is the form of government? 2. What about the boundaries? 3. Locate and state some facts about Monaco, Andorra, and Luxemburg. 4. Describe the surface of France. 5. What can you say about the climate? 6. What crops are raised? 7. What about live stock? 8. Lumbering and fishing? 9. What minerals are found? 10. Why is manufacturing extensive in spite of limited supply of fuel? 11. Tell about the woolen and cotton manufacturing. 12. Silk manufacturing. 13. Other manufacturing. 14. Name and locate the chief manufacturing cities. 15. What advantages for commerce has France? 16. Name and locate the principal colonies. 17. Explain the importance of the location of Paris. 18. Show how Paris is important as an art center. 19. As a manufacturing center. 20. What about its commerce? 21. Locate and state the important facts about other cities in France.

Suggestions

1. Make a collection of photographs of scenes in Paris. 2. Raise a silkworm from the egg. 3. When a hole is broken into a cocoon, its value for silk is destroyed. Why? 4. Examine a cocoon, and see if you can unravel some of its thread. 5. Also unravel a piece of silk goods and examine the threads. 6. See if you can find any Sèvres or Limoges ware. 7. Draw an outline map of France, with the principal mountains, rivers, and cities. 8. Bound France.

4. Italy (Fig. 517)

Map study

1. How does the latitude of Italy compare with that of New England? 2. What neighboring islands belong to it? 3. Point out the principal river. 4. What mountains extend from north to south? 5. What mountains lie on the northern boundary? 6. What countries border Italy? 7. What seas border it? 8. How does its position seem to be favorable for commerce?

Fig. 503. — Victor Emanuel III, King of Italy.

This country is mainly a long peninsula, shaped somewhat like a boot, which extends down into the Mediterranean Sea. What sea lies to the east of it? The island of *Sicily*, on the south, and also *Sardinia* on the west, both belong to Italy.

The parts of the country

The area of Italy is only a little greater than that of Colorado; but its population is over thirty-three millions. It is the smallest of the six Great Powers, but is the most densely settled of all except the United Kingdom.

Its area and population

Like Germany, Italy was for a long time divided into several independent countries. Now, however, these are all united under a single government. As in Germany and the United Kingdom, the form of government is a limited monarchy, the king at the present time being Victor Emanuel III (Fig. 503).

Its government

Most of the Italian peninsula is mountainous. In the north are the Alps, some of whose highest peaks are on the boundary between Italy and Switzerland. In northwestern Italy the Alps curve around and join the Apennines, which extend the entire length of the peninsula like a backbone. The principal lowlands are the narrow coastal plains and the broad Po Valley. There are also many small, fertile valleys among the mountains.

Surface features

We think of Italy as a sunny land of flowers, although Milan and Venice are in nearly the same latitude as Montreal. One reason for the pleasant Italian climate is that the lofty Alps form a wall that cuts off the cold north winds. Another reason is that the air is kept warm by the Mediterranean Sea whose water remains warm even in winter. On these accounts the Italian winters are mild; and in the extreme south the temperature seldom falls to the freezing point.

Climate

There is plenty of rain in many

parts of Italy during the winter; but in summer, when crops need it, there is far too little.

A large part of the agriculture of Italy is carried on by the aid of irrigation. Indeed, they irrigate the land even where there is plenty of rain for crops. This is done because then plants can be given water when they need it, and there need be no fear of drought. Irrigation makes better crops, for the flooding of the land keeps the soil damp and also fertilizes it.

Agriculture
1. Importance of irrigation

FIG. 504.—Lago di Garda, one of the Italian lakes on the southern side of the Alps. Groves of lemon trees are found along the shores of the lake.

The most extensive farming district is the fertile plain of the Po Valley. The tributaries of the Po, fed by the rains, snows, and glaciers of the mountains, furnish a large supply of water for irrigating the plain. Many of these streams flow through lakes — some of them among the most beautiful in the world (Fig. 504) — which act as great reservoirs for water supply. By the aid of irrigation from four to ten crops may be raised in a year.

With such extensive use of irrigation, and with such a warm climate, agriculture flourishes in Italy. It is the leading occupation of the country, and agricultural products are the chief exports.

Among the products are many that thrive in semi-tropical climates, as well as others that are common in northern Europe. Where irrigation is so easy, the extensive cultivation of rice is possible. This is an important crop in northern Italy; but corn and wheat are raised in still greater quantities. Grapes are grown to such an extent that Italy ranks second among the wine-producing countries of the world; and so many silk worms are raised that raw silk is the most valuable export. Among the other products are eggs, which are exported in large quantities; also olives, oranges, lemons, tobacco, hemp, and vegetables. Many horses and cattle are reared on the farms.

2. Agricultural products

On some of the mountain slopes forests are grown, but most of the natural forest was cut off long ago. Among the useful trees are the chestnut. These are planted in groves for the nuts, which serve as an important food. The Italian chestnut is much larger than ours, and is ground up into a kind of meal, as wheat is ground into flour.

Among the mountains there is much natural

pasture, to which herds of sheep and goats are driven in summer. Many goats are raised in Italy for their milk, and they are even driven into the cities, and milked at the doors of the customers (Fig. 505).

3. Important drawback to agriculture

One great drawback to the development of agriculture in Italy is the presence of broad, marshy tracts infested with mosquitoes, whose bite causes malaria. This is especially true in the southern half of the country, and there, even with fertile soil and a warm climate, large tracts of land have had to be abandoned. One sixth of the population suffers from malaria, and there are thousands of deaths from that disease every year. It is not to be wondered at that the Italian government is trying to stamp out this dread disease.

FIG. 505. — A herd of goats in the streets of Naples. They are driven from door to door, and milked whenever the customers wish to buy the milk.

Fishing

The fishing industry is important. Among the peculiar products of the sea are fine coral and sponges. You will remember that we found sponge fishing important also among the Bahama Islands east of Florida.

Mining

Italy is not very rich in valuable mineral deposits. Except in the island of Elba there is almost no iron; and no coal of value is found in the kingdom. Indeed coal, next to cotton, is the leading import. There is a little zinc and copper ore; but one of the most valuable mineral products is the sulphur of Sicily. Another mineral product is the pure white Carrara marble, of such rare quality that it is prized the world over.

Water power supplies the place of coal to some extent, and is often used to produce electricity. There is, therefore, more manufacturing than, from the lack of fuel, one might suppose. There is much silk manufacturing, but a large part of the raw silk is sent to France, Switzerland, and elsewhere, to be made into cloth. There are also woolen and cotton factories.

Manufacturing

The northern part, at *Turin*, and near the Alps, is especially noted for its manufacturing, and many different things are made here. Among the manufacturing industries are glass work, lace making, earthenware manufacture, the making of statuary, wood carving, coral carving, and straw plaiting. The Italians are very artistic, and they make many beautiful things that are highly prized in other countries.

Commerce

Italy has much less commerce than any one of the Great Powers so far studied. One reason for this is that Italy is not such a great manufacturing country. Another is that it is situated at one side of the densely settled part of Europe,

and its ports are farther from the New World than those of France, England, and Germany.

It has some commerce, however, for it has products to export, and must import others. For commerce in the Mediterranean, Italy is more favorably situated than any other nation, as it lies in the very heart of this great inland sea. It therefore has important trade with Africa and with Asia. Its only colonies are in eastern Africa.

FIG. 506. — A team in Naples consisting of a horse, a cow, and a donkey.

The largest city of Italy is NAPLES, in the southern part of the peninsula. The Bay of Naples on which it is situated, is wonderfully beautiful. On the north side, near the head of the bay, is the city itself, rising, street above street, upon an amphitheater of hills; toward the east is Mount Vesuvius (Fig. 507), with the crests of the Apennines in the distance; and on the south side of the bay is a steep, rocky coast, with numerous villages, partly concealed among groves of orange, lemon, and olive trees. All around the bay is a succession of towns and villages.

Principal cities in the south

1. Naples and vicinity

(1) *Beauty of its location*

This is one of the most densely settled regions in Europe. One reason for this is the fact that the land here is very fertile, made so by the volcanic ashes of Vesuvius. Another reason is the warm climate, and a third is the fine harbor. There is more shipping here than in any other Italian port, with the single exception of Genoa.

(2) *Reasons for the dense population here*

One reason for so large a city, and for so many towns and villages in this farming region, is the character of the Italians. They do not like to be alone. Instead, therefore, of living in scattered houses on farms, as is common in the farming districts of the United States, they crowd into the villages and cities. They do this, too, even though they must travel long distances to their fields of work, or suffer now and then from extreme want.

Within plain sight of Naples stands Mount Vesuvius, a cone of lava and ashes nearly a mile in height, from whose crater volumes of steam pour forth almost constantly. At the time of Christ the slopes of this mountain were dotted with farms, while thriving towns spread over the country at its base. But in the year 79 a terrible eruption took place that completely buried Pompeii, Herculaneum, and many villages, beneath showers of ashes and streams of volcanic mud. Since then Vesuvius has been in eruption many times, the last violent outbreak being in 1906, when much damage was done.

(3) *Mount Vesuvius; its history and attractions*

During the last century the buried city of Pompeii has been uncovered at great labor and cost. By these excavations much has been learned about the buildings and customs of the people who lived here at the time of Christ. One can walk along these deserted streets (Fig. 509), and wander among the ruined homes from which the people were driven forth on that terrible day, nearly two thousand years ago.

The principal city south of Naples is PALERMO, the capital of Sicily. It is situated in the midst of extensive vineyards and fruit groves. What fruits would you expect to find there?

2. Palermo

The site of Rome, the capital of Italy,

FIG. 507. — Vesuvius in eruption (1892). Huge volumes of steam and ash rise from the crater, while flows of liquid rock, or lava, stream down its slopes.

At present, one is able to go to the summit of Vesuvius on almost any day. There can be seen one of the most awful sights in the world, when one cautiously approaches the very edge of the crater — an opening several hundred yards across — and peers down into the abyss. Reports like the thunderings of cannon come from far below, and lumps of white-hot lava, several feet in diameter, are often hurled upward. At times lava lumps are thrown above the mouth of the opening and fall here and there outside, making one's visit full of excitement.

and the ancient capital of the mighty Roman Empire, was well chosen. It lies near the center of the Italian peninsula, and near the center of the Mediterranean as well. It is not a seaport, but lies at some distance from the sea, on the Tiber, the largest river of the country except the Po.

Rome
1. Its location

Fine residences, public buildings, art galleries, and notable ruins are numer-

FIG. 508. — The castle of St. Angelo, one of the ancient buildings of Rome.

FIG. 509. — A street in Pompeii. Even the tops of the houses were buried beneath volcanic ash which was erupted from Vesuvius (seen in the background) in the year 79.

ous in Rome. The dome of *St. Peter's* — the largest and most famous church in the world — towers above everything else; and the *Vatican*, where the Pope resides, is the most noted palace in Christendom (Fig. 510). In the Vatican are some of the finest and most beautiful of Michael Angelo's paintings.

2. Its attractions

The ruins of ancient Rome, which have been partly excavated, cover so many acres that the city is almost as much a tomb as a living city. One of the most notable relics of the past is the *Colosseum* (Fig. 512), a huge, oval-shaped amphitheater, open to the sky, with seats for forty or fifty thousand persons. In the days of the Roman Empire it was used to witness life-and-death struggles between men and between men and wild beasts.

The *Forum* is another extensive ruin of ancient Rome (Fig. 513). It was the great public square, on a lowland among some low hills; but during the centuries that followed the fall of the Roman Empire, its monuments, arches, and other ornaments became entirely buried underneath rubbish. Whole buildings, as well as smaller objects, were so buried.

With the exception of Rome and Naples the large cities of the Italian peninsula are in the northern part. The first one north of Rome is FLORENCE, in a beautiful valley at the western base of the Apennines. Straw plaiting, mosaic work, and silk manufacturing are important Florentine industries. Florence is famous for its art galleries, which are among the finest in the world.

Principal cities in the north

1. Florence

MILAN, in the Po Valley, is the leading

FIG. 510. — St. Peter's Cathedral (on the left) and the Vatican (on the right) in Rome.

FIG. 512. — The Colosseum, one of the ruins of ancient Rome.

city of northern Italy. TURIN is another large city in the same valley. From very early times these cities have been important trade centers because of their positions at the crossings of trade routes in a fertile, densely populated valley. The railways recently built across the Alps, through long tunnels, have greatly increased their importance. They are busy manufacturing centers, making silk goods, cutlery, and other articles.

2. Milan and Turin

GENOA, although separated from the Po Valley by the Apennines, is the natural seaport for Milan and Turin. Since it is a port of outlet for so fertile a region, and is now connected with central Europe by railway, this city is the leading seaport of Italy.

3. Genoa

The principal port on the Adriatic Sea is VENICE, one of the most interesting of European cities. It was once one of the most powerful cities of Europe, and had extensive commerce with Central Europe, the countries of the Mediterranean, and Asia. Its citizens gained great wealth and made Venice one of the most beautiful cities of the world. Many fine houses, churches, palaces, and museums still remain to remind us of the ancient splendor of Venice.

4. Venice

The city is built upon more than a hundred small marshy islands, about two and a half miles from the mainland, with which it is now connected by railway. Canals take the place of streets. There are one hundred and fifty canals, the main one, or Grand Canal, being bordered by white marble palaces, whose doorsteps lead down into the water. Nearly four hundred bridges join the different islands, and there are many narrow footpaths; but since the chief highways are canals, *gondolas* (Fig. 515) take the place of wagons, carriages, and street cars. No doubt, thousands of children in that city have never seen a horse.

FIG. 513. — Ruins of some of the fine old buildings of ancient Rome, which for centuries were buried beneath rubbish.

FIG. 511.—A street scene in Florence, Italy, the Duomo, or cathedral, in the background.

Fig. 514. — The Milan Cathedral, one of the most magnificent cathedrals in the world. It is built of white marble, and is adorned with a hundred spires, and fully four thousand statues.

San Marino, although surrounded by lands that belong to the Kingdom of Italy, is a tiny independent republic. It is the oldest, as well as the smallest, republic in the world, and owes its independence partly to the fact that the city is on a high, steep hill (Fig. 516) and was therefore difficult to capture.

San Marino and Malta

South of Sicily is the small island of *Malta* (Fig. 450), which, like Gibraltar, belongs to Great Britain, and is strongly fortified.

Review Questions

1. What islands belong to Italy? 2. What are the area and population of Italy? 3. What kind of government has it? 4. Describe the surface features. 5. The climate. 6. Why is irrigation especially common there? 7. Name the agricultural products. 8. How does malaria interfere with agriculture? 9. State the principal facts about fishing and mining. 10. Manufacturing. 11. What about the commerce of Italy? 12. Describe the beauty of the location of Naples. 13. State the reasons for the dense population near Naples. 14. Tell about Mount Vesuvius; its history and attractions. 15. Locate Palermo. 16. Describe the location of Rome. 17. What are its present attractions? 18. Locate and state the principal facts about Florence. 19. Milan and Turin. 20. Genoa. 21. Venice. 22. San Marino and Malta.

Suggestions

1. What copies of great paintings from Italy have you seen? 2. Find pictures of some of the ruins in Rome, or elsewhere. 3. Find out about the Catacombs of Rome; the Appian Road; the Aqueducts. 4. Ask some lawyer to tell you what influence Roman law has had upon our own law. 5. Find some facts about Caesar, Cicero, Dante, Leonardo da Vinci, and Michael Angelo. 6. Where was Columbus born? 7. Bound Italy.

Fig. 515. — A gondola on one of the canals in Venice.

8. Make a drawing of the country and show the location of the chief cities and rivers.

5. Austria-Hungary (Fig. 517)

Map study 1. Compare Austria-Hungary with Germany in area. (See Appendix.) 2. In population. 3. In number of large cities. 4. How much of the boundary is formed by water (Fig. 517)? 5. What countries border this empire? 6. What portions are mountainous? 7. Make a sketch of the mountains, with names (Fig. 451). 8. Trace the course of the largest river. 9. What parts of Austria-Hungary do not belong to the Danube basin?

Area and parts of the country This empire is larger than any other country in Europe except Russia; yet it is not so large as our state of Texas. It is made up of two main parts: (1) *Austria*, on the west, where many of the people are of the same race as the Germans, and where the German language is spoken; and (2) *Hungary*, where entirely different languages are spoken, and where the people are of very different races, some having come from Asia.

Fig. 516. — The citadel of the Republic of San Marino.

Fig. 518. — Francis Joseph, Emperor of Austria-Hungary.

Government Austria and Hungary are united to form a monarchy under a single ruler; yet each is independent of the other in some respects, and each has its own capital. The present emperor is Francis Joseph I (Fig. 518).

Surface features Austria-Hungary is one of the most mountainous countries in Europe. It includes the eastern half of the Alps (Fig. 519), besides several other ranges. These mountains form a circle inclosing a broad level area (Fig. 451), called the Hungarian plain, through which the Danube River flows. The inclosing mountains are broken at only two points, — one near Vienna, where the Danube enters the Hungarian plain (Fig. 523), and the other on the southeastern boundary, where that river leaves it.

Climate Everywhere except on the higher mountains, the temperature is favorable for the growth of grains and other crops of temperate latitudes. That is, the summers are warm and the winters are cold;


CENTRAL EUROPE
Scale of Miles
0 50 100 200 300
Cities with over 1,000,000 Berlin
Cities with 200,000 to 1,000,000 Naples
Cities with 100,000 to 200,000 Venice
Smaller places Erfurt
Capitals with less than 100,000 BERNE
Capitals of Countries
Other Cities
NORTH SEA
Skager Rack
Cattegat
NORWAY
SWEDEN
Gothenburg
Jönköping
Linköping
Karlskrona
Lund
Malmo
GOTLAND
ÖLAND
BALTIC SEA
DENMARK
Aarhus
Copenhagen
SEELAND
FYEN
Odense
BORNHOLM (To Den.)
RUGEN
KAISER WILHELM CANAL
Kiel
Lubeck
Altona
Hamburg
Bremen
Stettin
Danzig
Konigsberg
Gulf of Riga
Riga
RUSSIA
GERMAN EMPIRE
Berlin
Charlottenburg
Posen
Warsaw
Lodz
POLAND
Hanover
Brunswick
Magdeburg
Stassfurt
Halle
Leipzig
Dresden
Breslau
Gorlitz
Chemnitz
ERZGEBIRGE
Reichenberg
Prague
Carlsbad
Pilsen
Krakow
Lemberg
NETHERLANDS
Krefeld
Essen
Dortmund
Kassel
Düsseldorf
Barmen
Elberfeld
Aachen
Cologne
Erfurt
Frankfurt on Main
LUXEMBURG
Mainz
Darmstadt
Wurzburg
Metz
Karlsruhe
Baden-Baden
Mannheim
Nuremberg
Stuttgart
Strassburg
Mülhausen
Augsburg
Munich
Budweis
Brunn
CARPATHIAN MTS.
Kaschau
Linz
Danube
Pressburg
Czernowitz
Dniester R.
Jassy
Salzburg
Vienna
Basel
Zurich
St. Gallen
LIECHTENSTEIN
BERNE
Lucerne
SWITZERLAND
Lausanne
Geneva
Mt. Blanc
THE ALPS
Innsbruck
Odenburg
Gratz
Budapest
Debreczen
AUSTRIA-HUNGARY
Balaton L.
Maria Theresiopel
Szegedin
Klausenburg
Odessa
Kronstadt
Galatz
Laibach
Agram
Temesvar
Trieste
Fiume
Milan
Turin
Padua
Verona
Venice
Mt. Cenis
Genoa
Po R.
Ferrara
Ravenna
Pola
Save R.
Braila
Bologna
San Marino
Banjaluka
BELGRADE
SERVIA
Bucharest
ROUMANIA
Crajova
Rustchuk
Pisa
Florence
Leghorn
Ancona
ADRIATIC SEA
Danube
Varna
Nish
BULGARIA
SOFIA
BALKAN MTS.
Philippopolis
BLACK SEA
CORSICA (To France)
Ajaccio
ELBA
ITALY
APENNINES
Tiber R.
Rome
MONTENEGRO
CETTINJE
Prisrend
Adrianople
Bosporus
Scutari
Uskup
TURKEY
Constantinople
Seres
Sea of Marmora
Sassari
Foggia
Bari
Monastir
Salonica
Brindisi
Gallipoli
Naples
Mt. Vesuvius
Otranto
TYRRHENIAN SEA
SARDINIA (To Italy)
Gulf of Taranto
Dardanelles
Janina
Larissa
Corfu
Trikala
ÆGEAN SEA
Cagliari
Strait of Messina
IONIAN SEA
GREECE
Palermo
Messina
IONIAN ISLANDS
Athens
Piræus
SAMOS
Patras
Corinth
SICILY
Mt. Etna
Catania
Kalamata
AFRICA
C. Matapan
MEDITERRANEAN SEA
Longitude East from Greenwich
Williams Engraving Co., N.Y.

FIG. 517.

FIG. 519. — A street in Innsbruck in Austria, with the snow-covered Alps rising steeply in the distance.

but the difference between summer and winter is much greater than in England. Why?

The rainfall of the lowlands is only about enough for crops, and there are occasional summer droughts in some places.

People and language

Austria-Hungary is different from any country so far studied in one very important respect. Its people are not of one race, and they do not even have a common language. About one fourth of the people, mainly in Austria, are of *German* stock. In Hungary, on the other hand, nearly half the population is *Magyar*, a people related to the Mongolians. Even more numerous than either of these are the *Slavs*, of Russian origin. In the southwest there are many people related to the *Italians;* and there are a number of other races in the empire. German is spoken by most of the educated people, but at least a dozen languages are spoken in the empire, and even two or three in a single town.

This great mixture of races is the result of three causes. In the first place, the empire is in the center of Europe, surrounded by other nations differing in speech, and it has been easy for these to push across the borders. A second reason is that the empire has been enlarged through war, and thus people of different languages have been forced to join the nation. The third reason is that in this mountainous country, with many inclosed valleys, people have tended to develop customs and languages different from those of their neighbors.

FIG. 520. — A family of gypsies and their house, in Austria.

Many of the mountain slopes are forest-covered, and wild animals are still found in the remoter parts. Since nearly a third of the empire is wooded, lumbering is one of the important industries.

Lumbering and agriculture

Where the woods have been cleared away from the mountain slopes, there are pastures for sheep and goats. Cattle also are raised, especially on the lowlands.

Near the Adriatic Sea, and in the warmer valleys, there are many vineyards; and the mulberry tree furnishes food for the silkworm, as in northern Italy and in southern France. Flax, hemp, potatoes, sugar beets, and tobacco are other important crops. But the grains, especially wheat, rye, barley, oats, and corn, are the chief agricultural products of both Austria and Hungary. The broad plains of the Danube form one of the leading wheat-producing regions of Europe. So much wheat is raised that a large amount is exported.

There is much mineral wealth in the mountains, including the precious stone called *opal*, and deposits of salt, gold, silver, lead, quicksilver, and copper. There are deposits of clay used in the manufacture of fine porcelain ware; and of quartz, which supplies the material for the Bohemian glass blowers, who make some of the finest glassware in the world.

Mining

Iron ore is widely distributed; and Austria-Hungary ranks third among the coal-producing countries of Europe (Fig. 455). Some of the best deposits are in the northwest, near PRAGUE. Petroleum is also found in this empire.

There is much less manufacturing in Austria-Hungary than in Great Britain, Germany, or France. Yet there are numerous cotton, woolen, flour, and paper mills, iron manufactories, and beet-sugar refineries. There is also much silk weaving. The chief manufacturing region is in the northwest, near Germany, while the principal agricultural sections are in the central and eastern parts.

Manufacturing

FIG. 521. — An Austrian village with mountains in the background.

This empire has only a small strip of coast on the Adriatic Sea, remote from the Atlantic Ocean. Its ocean commerce therefore is not very extensive, and it is easy to understand why it has no colonies. The means of transportation in the interior are also poor. This is partly due to the mountainous country, which makes the building of canals and railways difficult. It is also partly due to the direction of the rivers. The largest of these, the

Commerce

Danube, which is navigable from Germany to its mouth, flows eastward and its lower course is in other countries.

FIG. 522. — A view in Vienna showing some of the fine public buildings.

It leads *away* from the great markets of Europe and of the New World, instead of toward them. The navigable Elbe connects the northern part of the empire with the sea, and there are also several railway lines to the Atlantic and Baltic seaports. The greater part of the foreign commerce is carried on through the German ports.

There are many small cities in this empire, but few large ones. The largest two, VIENNA, the capital of Austria, and BUDAPEST, the capital of Hungary, are on the Danube River.

Principal cities

VIENNA, which is larger than Philadelphia, is the greatest city in Austria-Hungary and the fourth in size in Europe. The main reasons for its size are the facts that it is the capital of a great empire and is located on a large river in the central part of Europe. The railways which lead from St. Petersburg to Rome, and from Berlin and Paris to Constantinople, meet at this point, making the city a great railway and trade center.

1. Vienna

Vienna is a beautiful city, with many fine public buildings (Fig. 522), including the palace of the emperor and some noted museums. As in most large cities, there is much manufacturing of various kinds.

BUDAPEST, made up of two towns (Buda and Pest), on opposite banks of the Danube, is the capital of Hungary and the home of the Emperor for a part of each year. The city lies in the midst of the fertile wheat-raising plains of the Danube, and is engaged in flour manufacture and grain shipment.

2. Budapest

FIG. 523. — A view of the Danube River at Budapest.

PRAGUE, the third city of Austria-Hungary, is situated on the navigable Elbe, which has been an important trade route since

3. Prague

FIG. 524. — Some of the native animals of Europe.

early times. Located in the midst of a rich mineral region, it is a noted manufacturing center.

TRIESTE is the largest Austrian seaport. Although separated from the main part of the country by mountain ranges, it is connected with the interior by a railway.

4. Trieste and Fiume

FIUME, southeast of Trieste, has an excellent harbor, but has little trade and is a small town.

5. Lichtenstein

On the boundary between Austria and Switzerland is *Lichtenstein*, a very small independent country.

Review Questions

1. How large is Austria-Hungary? 2. What about its two parts? 3. What kind of government has it? 4. Describe the surface features of Austria-Hungary. 5. The climate. 6. Tell about the mixture of races here. 7. Give reasons for such a mixture. 8. State the principal facts about lumbering. 9. About agriculture. 10. What minerals are found? 11. What can you tell about manufacturing? 12. Why is there so little commerce? 13. Locate and give the principal facts about Vienna. 14. Budapest. 15. Prague. 16. Trieste and Fiume. 17. Locate Lichtenstein.

Suggestions

1. How far is Vienna from Rome? From Paris? From Berlin? 2. Trace the course you would take, if you traveled by water from New York to Vienna. 3. In an atlas look up Austria-Hungary to find the portions which are called Tyrol, Moravia, Bohemia, Bosnia, Herzegovina, and Transylvania. 4. Look up some facts about the history of Poland. 5. Find out something about Kossuth. 6. Bound Austria-Hungary. 7. Make a drawing of it, including in the sketch the Danube River and the principal cities.

6. RUSSIA (Fig. 450)

Map study

1. About how much of Europe is included in Russia (Fig. 450)? 2. What part of the distance from pole to equator is included? 3. What does this suggest concerning the climate? 4. What parts of the boundary of Russia are seacoast? 5. Name the seas which border it. 6. Name the mountains on or near the border. 7. What portion of Russia is occupied by plains (Fig. 451)? 8. In what directions do the large rivers flow? Name the longest three. 9. Is there any outlet from the Caspian Sea? What does that fact suggest? 10. Find Poland, Finland, and Lapland. 11. What parts of Asia are in the Russian Empire (Fig. 566)?

Area and population

Russia is larger than all the other countries of Europe combined, but only about two thirds the size of the United States. Its population, however, is considerably larger than ours, and about twice that of any other European country.

The Ural Mountains form a part of the eastern boundary of European Russia. The Russian Empire, however, extends thousands of miles farther east, reaching across Asia even to the Pacific Ocean. The part of the Empire beyond the Urals is called Siberia. Including Siberia, and other Russian possessions in Asia, the area of the whole Empire is greater than that of all North America. Only the European part is now to be studied.

People

The people of Russia belong to different races. Some have come from the vast plains of Asia, and some from other parts of Europe. The country is so large, and so much of it is a plain over which it is easy to travel, that people from very different sections have migrated to it.

Most of the Russians are *Slavs*, a division of the white race that speaks a very different language from that of any other Great Power. The *Lapps* of Lapland and the *Finns* of Finland are under the rule of Russia, but they both belong to the yellow, or Mongolian race. These are only a few of the kinds of people in Russia, for in all about forty

different languages are spoken in this empire.

All these people, with different languages and customs, are kept under control by a government which is very different from any thus far studied. France is a republic, and the four other Great Powers of Europe are called *limited monarchies;* but the Russian government is an *absolute monarchy*, or *despotism*. This means that the ruler, who is called the *Czar*, can do more nearly as he pleases than can any of the other rulers of Europe. The name of the present Czar is Nicholas II (Fig. 526).

Government

Fig. 525. — A family of Russian peasants.

The common people of other European nations have been steadily getting more and more liberty and better education; but the Russian people have been kept in poverty and ignorance (Fig. 525). Until the middle of the last century the common people were *serfs*, who were little better than slaves to their lords, the nobles. Even now that they are freed, little attempt is made to educate them, and they have little liberty.

In recent years the people have been allowed to elect representatives to the *Duma*, which somewhat resembles our Congress. Yet even in the Duma, the representatives are not free to speak and vote as they choose.

Fig. 526. — Nicholas II, Czar of Russia.

Most of Russia is a very level plain, the highest part of which is near the center, where the elevation is only about twelve hundred feet above sea level. Several large rivers have their sources in this central hilly region, and flow outward in different directions. What are their names? These rivers flow with gentle course over the vast plains, and are therefore very useful for navigation.

Surface features

Mountains are found in Russia only on the borders. Name those on the eastern border. What is the name of the mountains in the south? Mt. Elbruz, in these mountains, is the highest peak in Europe. At the northern

FIG. 527. — The city of Moscow, situated in the midst of the vast, level Russian plain.

base of the Caucasus there are broad plains, some portions of which are below sea level. It is in these plains that the Caspian Sea, a great salt lake without outlet to the sea, is situated.

Climate

Russia lies so far from the ocean that it is much less under the influence of the ocean winds than France, Germany, or the British Isles. The northern half of the country, therefore, has cold winters, and in the far north a frigid climate. But Russia extends so far south, that in the southern portion, near the Caucasus, the climate is that of the warm temperate zone.

In most of the country there is rainfall enough for agriculture (Fig. 456), though in parts farthest from the sea droughts are common. Southeastern Russia, near the Caspian Sea, has a very dry climate, and in places this region is a true desert.

It is because of this dry climate that the Caspian Sea, the greatest inland sea on the earth, is salt. The water evaporates from its surface faster than it can be poured in by the rivers, even though it receives the Volga, the largest of European rivers. The Caspian Sea cannot, therefore, rise high enough to flow out to the sea. In fact, there is so much evapora-

FIG. 528. — Reindeer, used in winter for drawing sleds over the snow-covered ground of northern Russia.

tion that the surface of the Caspian Sea is kept eighty-five feet lower than the level of the ocean. The Aral Sea, nearby, also is salt.

Agriculture

1. Sections unsuited to agriculture

In some parts of Russia the climate is unsuited to agriculture. In the northern part, for instance, the plains, called *tundras*, are always frozen. Even in summer they thaw out only at the surface, and trees cannot grow upon them. Mosses and grasses are the chief plants there, and the reindeer, which feeds upon them, is the principal domestic animal (Fig. 528). It is the main support of the few people who live on the tundras.

Southeastern Russia, on the other hand, is too dry for agriculture without irrigation. This is the region of the *steppes*, which resemble the arid lands of our Western States; here grazing is the leading industry.

2. Chief products

Although agriculture is impossible in some parts of Russia, a very large part of the vast empire has level land, good soil, and a climate favorable to farming. Fully nine tenths of the people are supported by farming, which shows that Russia is mainly an agricultural country.

The chief crops are the grains, especially rye, wheat (Fig. 529), barley, and oats. Russia ranks next to the United States among the grain-producing countries of the world, and wheat is one of its principal exports. Another important crop is hay; and potatoes, sugar beets, and flax are raised in the cool temperate climate. In southern Russia the warm climate permits the culture of grapes, tobacco, and corn; and south of the Caucasus even olives and cotton are grown.

3. Grazing

On the grazing lands of the arid steppes many sheep, cattle, and horses are raised. The nomadic herdsmen still retain many of the customs of the shepherds and herders of Bible times, who dwelt farther south in Asia. This is the home of the *Cossacks*, a people of Tartar descent, noted for their skill as horsemen, and for their fierce bravery.

FIG. 529. — A Russian peasant girl harvesting wheat by hand.

Lumbering and fishing

Nearly a third of Russia is forest covered, and timber is one of the leading resources. Many fur-bearing animals live in the forest, and Russia, like Canada, exports large numbers of valuable furs. Fishing is an important industry in Russian waters, both in the sea and in the rivers and lakes.

Russia is a noted mining country. In the Ural Mountains are gold, silver,

copper, and platinum, besides some precious stones and graphite, or "black lead," used in lead pencils.

Mining

Coal and iron are mined in several parts of Russia, particularly in the east, in Poland (Fig. 455). The Russian Empire ranks next to the United States in the production of petroleum. This oil is found in several places, but mainly near *Baku* on the Caspian Sea. Large quantities are used as fuel for steamers on the Caspian Sea and the Volga River; and, as in California, the oil is used in locomotives.

Fig. 530. — A Græco-Russian church in Moscow.

Numerous factories have recently been started in Russia, but most of the manufacturing is still done by hand in the homes of the workmen. How different this is from the United States and Great Britain! Distilling and brewing, cotton manufacturing and sugar refining, are the principal forms of manufacturing carried on in factories. Flour mills, woolen and linen factories, and iron works rank next in importance. What raw products of Russia encourage these industries?

Manufacturing

Since Russia is mainly an agricultural country, its exports are largely food products and raw materials for manufacture, and its imports are chiefly manufactured goods. How different this is from England, Germany, and France!

Commerce

Russia is unfortunate in lacking good seaports. A part of the seacoast is on the Arctic Ocean, where the harbors are icebound nine months of the year. A part is on the Baltic Sea, and there, also, the harbors are frozen over in winter. The Caspian Sea has no outlet, so that vessels cannot get out of it.

The best seacoast is on the Black Sea; but to get from this to the Atlantic Ocean, it is necessary to pass through a narrow strait, called the Bosporus, and then through the Mediterranean Sea. This is a very long journey. Russia therefore resembles Austria in its lack of good and convenient seaports.

On the other hand, the interior of Russia is so level that it is easy to build railroads there. Water transportation is easy, too, because of the large rivers. Into what water does each of these rivers empty?

The value of the rivers is greatly increased by means of canals, which have been easily built across the plains. It is possible to go, by river and canal, from both the Caspian and the Black seas to the Baltic Sea. On what

rivers might one travel in making each of these journeys?

Principal cities

1. Moscow and Nizhni Novgorod

Moscow (Fig. 527), the second city in size, and once the capital of Russia, is located almost in the center of the empire. It has long had connection with distant parts of Russia by river and canal, and is now a great railroad center. Being situated in the midst of a fertile, densely settled region, Moscow has become one of the chief manufacturing cities of the empire. It is the holy city of Russia, being the center of the Græco-Russian Church, and has many fine royal palaces, government buildings, and churches (Fig. 530).

East of Moscow, on the Volga River, is NIZHNI NOVGOROD, renowned for its yearly fairs. For centuries this has been a great trade center for the exchange of Asiatic and Russian products, which have been easily carried on the navigable Volga. The fairs, held in August and September, are the greatest in Europe, and attract as many as two hundred thousand strangers each year. In a single season goods are here exchanged to the value of nearly $200,000,000, and prices are fixed on crops and other materials for the coming year.

2. St. Petersburg and Riga

While the two cities just described are very old, their position in the interior is not favorable for commerce with distant nations. It was this fact that led Peter the Great, in 1703, to found ST. PETERSBURG at the head of the Gulf of Finland. This is now the largest city in Russia, and the fifth in size in Europe. Its growth is partly due to the need of a seaport in this section, and partly to the fact that the city is the capital of a great empire. More goods are shipped from this point than from any other Baltic port. RIGA, to the southwest, has about half as much shipping.

3. Odessa

ODESSA, another important seaport, is the chief outlet for the vast grain trade of southern Russia, and the principal port on the Black Sea. It is an important flour-milling center, like Minneapolis.

FIG. 531. — A Russian sleigh in St. Petersburg.

4. Warsaw and Lodz, in Poland

At one time there was a powerful kingdom, called *Poland*, in central Europe. But this kingdom was conquered and divided among Russia, Austria, and Germany. Russia obtained the largest share, and in this portion are situated WARSAW and LODZ, two of the leading cities in the empire. The former is a center for the railways that connect Russia with western Europe, and the latter is an important manufacturing

city. Much coal and iron are mined in this vicinity.

Finland

Finland, whose capital is HELSINGFORS, is a part of the Russian Empire, but is allowed some voice in its own government. It has a parliament which makes its laws, but the Czar has the right of veto upon them. Unlike the Russians, most of whom belong to the Græco-Russian Church, the Finns are mainly Protestants, belonging to the Lutheran Church. They are a nation of highly educated people. But it has been the policy of the Russian government to destroy their existence as a nation. On account of mistreatment from the Russians, many Finns and Poles have migrated to the United States.

Review Questions

1. What about the area and population of Russia? 2. What different races can you name, and how many languages are spoken in Russia? 3. What is the kind of government? 4. What is the condition of the people? 5. Describe the surface features. 6. What can you say about the climate? 7. What sections are unsuited to agriculture? 8. What are the agricultural products? 9. Where is grazing carried on? 10. What about the forest products? 11. Name the chief mineral products. 12. What is the condition of manufacturing? 13. What are the chief exports and imports? 14. State some facts about the seaports. 15. How is transportation of goods in the interior favored? 16. Locate and state the principal facts about Moscow and Nizhni Novgorod. 17. St. Petersburg and Riga. 18. Odessa. 19. Warsaw and Lodz. 20. Finland.

Suggestions

1. Compare Russia with the United States in area and population (See Appendix); also in degrees of latitude contained. 2. Name some city in the United States that has almost the same latitude as Odessa. 3. What part of eastern North America is in the same latitude as St. Petersburg? 4. Compare the area of the Caspian Sea with that of Lake Superior. 5. Show the route a vessel might take in going from Odessa to St. Petersburg. 6. What did Kosciusko, the Pole, do to make his name memorable to Americans? 7. Have you read the story of Thaddeus of Warsaw? If so, what can you tell about him? 8. Read how Peter the Great wandered through European countries, as a common workman, in order to learn Western customs. 9. Bound Russia. 10. Make a sketch map of Russia, with principal rivers and cities.

SECTION III. THE LESSER POWERS OF EUROPE

1. NORWAY AND SWEDEN (FIG 450)

Map questions

1. The Scandinavian peninsula is the largest in Europe. What is its length in degrees (Fig. 450)? In miles? 2. How does its western coast remind you of the western coast of Scotland? 3. What do you observe about the rivers of Sweden? 4. What points in North America have about the same latitude as Christiania and Stockholm? 5. Find a city north of the Arctic circle. 6. What does this location suggest as to climate?

Why thinly settled

The two kingdoms of Norway and Sweden, on the Scandinavian Peninsula, are each larger than the British Isles. Yet both together have a very much smaller population.

One reason for the sparsity of population is the latitude. Look upon a globe to see what part of North America is in the same latitude. It would not be possible for the few million inhabitants of

these two countries to live so far north if it were not for the west winds, which blow from the ocean. Even in spite of that influence, most of the region has a cold climate.

A second reason for the small number of inhabitants is the roughness of the surface. A mountain range extends almost the whole length of the peninsula, and some of the peaks rise more than a mile above the sea level. Most of the peaks are lower than this and of nearly equal height, forming a rough mountainous plateau. The mountains descend steeply to the ocean on the western side, so that Norway is a narrow, mountainous country. The surface is less rugged in the south and the east, so that southern Norway and southern and eastern Sweden have more farming land than the northern portions.

FIG. 532. — Peasants of Norway in their native dress.

Most of the people live in the southern and eastern parts, where the climate is milder and the land more nearly level. The Scandinavian people have been closely connected with our own history. They made some of the early invasions and settlements in Great Britain, and thus are numbered among our ancestors. Their daring seamen reached Greenland, by way of Iceland, and discovered America nearly five hundred years before Columbus visited it. During the last century they have migrated to the United States by thousands (Fig. 458), and have chosen homes in many states.

Their relation to us

FIG. 533. — Laplanders who live, mainly by fishing, in northern Norway.

It is easy to see that agriculture must be a far less important industry in the Scandinavian peninsula than in the countries that we have just been studying. The hardy grains and vegetables are the principal farm crops, and many cattle and sheep are raised on the mountain pastures. Why would you not expect to

Agriculture, lumbering, and fishing

find cotton, grapes, or tobacco growing here?

Where the mountain slopes are too rugged for farming, there are extensive forests. About one fourth of Norway, and much of Sweden, is covered with forest. Therefore, lumber is one of the leading products of both countries.

FIG. 534. — A view in one of the fiords on the coast of Norway.

Since crops are not extensively raised, fish are much used for food. There are many of these, especially cod and herring, in the shallow waters near the coast. More than a hundred thousand Norwegians are engaged in the fishing industry. Along the coast almost every family owns a boat, and often knows how to make one as well as how to use it. While the men are at sea, the women work the small farms or garden patches.

Some valuable minerals are found in Scandinavia, especially iron in Sweden.

Mining and manufacturing

There is also some silver and copper, but no coal. The mountain streams, however, furnish much water power, some of which is used in manufacturing. Most of the manufacturing is in the southern part of the peninsula, where it is easy to import coal for fuel.

Scenery

On the map you will notice that the coast of Scandinavia is very irregular, especially in Norway. Here the sea enters the deep mountain valleys, forming long, narrow bays, with steep walls. Some of these inlets, called *fiords* (Fig. 534), reach many miles into the land. They make excellent harbors and form some of the grandest scenery in Europe.

The cliffs are often only barren rock; but here and there, where the slopes are not too steep, green forests cover the surface. Glaciers are often in sight; and waterfalls abound on every hand. In some places the swollen streams from the mountains plunge downward for a thousand feet or more, over the nearly vertical cliffs that inclose the fiords.

Here and there, upon a level patch, a group of fishermen's homes is seen. These are usually upon the deltas of small streams, and are connected with the outer world by no road or pathway except the waters of the fiord. Thus cut off from others, each man must learn to do many things, — farm, fish, tan his leather, make his shoes, build his boat, his house, etc.

Many tourists go up the coast of Norway every summer in order to enjoy the scenery of the fiords, and to see the great glaciers that descend from the high mountains. The tourist steamers cross the Arctic Circle and go as far as North Cape, where in summer one is able to see the midnight sun (Fig. 535). During several weeks of summer, the sun circles around the heavens and does not set even in the middle of the night. For this reason the northern part of the peninsula is sometimes called "the land of the midnight sun."

The fiords of Norway and the protected bays of Sweden form excellent

harbors, and the Scandinavian people have become skillful sailors. In fact, in some of the Norwegian fiords the only way to get from one point to another is by boat. The need of obtaining fish for food has helped also to make the people skillful in handling vessels, while the abundance of lumber has made it possible to build them very cheaply.

Transportation of goods

Largely for these reasons, the Norwegians and Swedes are extensively engaged in shipping. They build boats, and man them with sailors for use in fishing and in carrying goods. Navigation is one of their leading industries, especially the carrying of goods for people of other countries.

Fig. 535. — The midnight sun at North Cape, the northmost point in Norway.

canal, or rail with the chief points of the country. Gothenburg, also a seaport, is the second largest city in Sweden. Locate each of these cities.

Christiania, the capital and principal city of Norway, is situated at the head of a long, narrow fiord which makes an excellent harbor. Bergen, the second city in size in Norway, is an important fishing port.

For a long time Norway and Sweden were united under the same king, but a few years ago they separated. Now each is a limited monarchy with its own king.

Fig. 536. — A view of Stockholm.

The chief cities are in the south. Stockholm, the largest, is the capital of Sweden. It is beautifully situated on an excellent harbor and is connected by lake,

Chief cities and government

Review Questions

1. Why are these countries thinly settled? 2. Describe the mountains. 3. How are the Scandinavian people related to us? 4. Tell about their agriculture, lumbering, and fishing. 5. Mining and manufacturing. 6. Describe the scenery of the fiords. 7. What do people see at North Cape? 8. Why is transportation of goods so important? 9. Name and locate the chief cities of Sweden. 10. Of

Norway. 11. What is the kind of government?

Suggestions

1. Sketch the peninsula. Put in the principal cities, and North Cape. 2. What is the latitude of North Cape? 3. Bound Norway. 4. Bound Sweden. 5. Why should Bergen be one of the rainiest cities of Europe? 6. Give reasons why harbors on the Baltic are blocked by ice much oftener than those on the western coast of Norway. 7. Find out about the early Norse explorations of North America. 8. Read and tell stories of the Norse gods in oldtime mythology. 9. Make a drawing of the Scandinavian peninsula, and show the boundary line between the two countries.

2. Denmark (Fig. 517)

Map study

1. Locate Denmark; point out the islands that form a part of the country. 2. At the entrance to what sea does Denmark lie (Fig. 450)? 3. How does Denmark compare in size with Maine? In population? (See Appendix.) 4. Locate the Faroe Islands. 5. Iceland.

Fig. 537. — A scene in Copenhagen.

Its relation to Scandinavia

Just south of Scandinavia is a small peninsula called Jutland. On its northern end is the little country of Denmark, which also includes several small islands near the mainland. The people of Denmark are closely related to the Scandinavians in language and customs, and at one time were united with them in one nation. In fact, these three countries, Norway, Sweden and Denmark, are often called the *Norse* nations, or the countries of the Norsemen, or Northmen.

Surface features and climate

Denmark is quite unlike Scandinavia in one respect; it has no mountains. Everywhere the surface is low, and much of the land is either sandy or swampy.

The climate is quite like that of southern Sweden, but is a little milder because Denmark lies farther out in the ocean, and there is water on almost all sides. There is plenty of rain for crops.

Industries

1. Agriculture

Farming, especially dairying, is the chief industry of Denmark. In this small country there are more than one and a half millions of dairy cows and about half as many sheep, besides large numbers of horses, goats, and pigs. Butter forms one half the exports.

2. Fishing and commerce

Since the country is surrounded by salt water, there is much fishing, but the fisheries of Denmark are of much less value than those of Scandinavia. The Danes have extensive commerce, and some of the men serve as sailors on the ships of other nations.

3. Mining and manufacturing

There is neither coal nor metal in the rocks of Denmark, so that there is no mining in the country. The only mineral product of value is clay. As in Ireland the lack of coal for fuel is partly met by peat from bogs and swamps.

In spite of their lack of raw materials the Danes have much manufacturing. They make machinery, ships, beautiful porcelain, and many other articles. They are a highly educated people and very industrious. The fact that Denmark lies on one of the leading highways of European commerce has helped greatly in the progress of the Danes, for it has brought them into close contact with the rest of the world.

Chief city; government

The coast of Denmark is so low, and so shut in by sand bars, that good harbors are lacking. In fact, the only harbor that admits large vessels is COPENHAGEN (meaning merchants' harbor), on Seeland Island. Since this point guards the entrance to the Baltic Sea, Copenhagen has become an important city. It is both the largest city and the capital of the country, which is a limited monarchy.

Colonies

The daring sailors living here in early times, called *Norsemen*, explored many lands, and had colonies even before the other countries of Europe. When Norway and Denmark separated, these colonies remained a part of Denmark. Although some of them have been lost, Greenland (p. 261) and the Faroe Islands are still Danish colonies, and Iceland is a Danish dependency. The *Faroes*, are a group of small islands north of Scotland. Denmark owns also three islands in the West Indies — St. Croix, St. Thomas, and St. John.

Iceland, which is larger than Ireland, and more than twice as large as Denmark, is an island having more than a hundred volcanoes, the most noted of which is Mount Hekla. Destructive volcanic eruptions and earthquakes are common, and there are also geysers similar to those found in our Yellowstone National Park. The interior is a desert plateau, in part covered by glaciers, and hence not inhabited. Near the sea, however, there is some good pasture land, and here the people are engaged in raising sheep as well as in fishing. Eider down, from the eider duck, is one of the important products of the island. The people are highly educated. What is the capital of Iceland?

Review Questions

1. What is the relation of Denmark to Norway and Sweden? 2. What are the surface features? 3. How does the climate compare with that of Sweden? 4. What are the agricultural products? 5. State the chief facts about the other industries. 6. Name and locate the capital. State the kind of government. 7. Name and locate the colonies of Denmark. 8. State the principal facts about Iceland.

Suggestions

1. Make a sketch map of Denmark. 2. What part of North America is in the same latitude as Denmark? 3. Hans Christian Andersen was a native of Denmark. What fairy stories do you know that were written by him?

3. THE NETHERLANDS (FIG. 479)

Map study

1. Compare the area of the Netherlands with that of Denmark. With that of the State of Maryland. 2. What large river crosses the Netherlands? Through what countries does it flow? 3. What countries border the Netherlands? 4. What sea lies west of this country?

FIG. 538. — Map to show the portion of the Netherlands that is below sea level

This little country is often called *Holland;* but the nature of the country

Fig. 539. — A canal at Middleburg in Holland.

FIG. 540. — A Dutch windmill, used for pumping the water from the low lands behind the dikes.

country is a low plain, partly the delta of the Rhine River. Indeed, much of it is even lower than the surface of the sea, and in some places the country is as much as fifteen feet below sea level. If there were no protection against the sea and the river, about one half of the country would be under water at times.

In order to live on this very low part, the inhabitants have built embankments, called *dikes*, to keep the sea out, and have dug canals to drain the land. The water that collects inside the dikes is pumped out by windmills (Fig. 540), or by steam. Canals extend in all directions, and furnish excellent highways for travel. They are, in fact, among the most important highways (Fig. 539), being used in summer for boats, and in winter for skating and sledding.

Nature of the country

is more clearly shown in its other name, *The Netherlands*, which means *low lands* (Fig. 538). There is some hilly land in the eastern and southern parts, but most of the

The damp, level land is well suited to agriculture, and this is the principal industry. The leading farm products are grains, such as rye, oats, wheat, barley, and buckwheat.

Agriculture

FIG. 541. — A Dutch scene. Cattle feeding in the rich pastures of Holland.

Potatoes, sugar beets, beans, peas, and flax are also grown. There are many gardens, including flower gardens where bulbs are raised. The Dutch raise such excellent bulbs that they are sold over all the world.

More land is devoted to pasture (Fig. 541) than to all these crops. This is largely because the moisture in the lowlands aids in the growth of excellent grass. Cattle, hogs, sheep, and horses are raised in great numbers; but cattle raising and dairying are the most important industries. The dairy products, especially butter and cheese, are shipped to other countries.

Fishing

Both the Zuider Zee and the North Sea, near at hand, contain many food fish; and this has made fishing an important Dutch industry.

Manufacturing

In so level a country there can be little water power; and there is no coal, and little other mineral wealth. One might not, therefore, expect to find much manufacturing. There is, however, an abundance of coal near by, in Belgium, Germany, and England. And, since the Dutch people require quantities of cloth, shoes, machinery, and other manufactured articles, they import both coal and some of the raw materials in order to manufacture for themselves.

The Hollanders, or Dutch, as they are usually called, have been great explorers. They once had possession of the Hudson Valley, even the part where New York City now stands; and they still own some of the richest islands in the East Indies. What part of South America belongs to The Netherlands? The Dutch have much commerce with their colonies, as well as with other parts of the world.

Navigation and commerce

Fig. 542. — A canal in the city of Amsterdam.

In their commerce they are aided greatly by the rivers and the many canals, which cross the country in every direction and offer a cheap means of transportation. The most important interior waterway is the Rhine River, which is navigable entirely across Germany. Therefore, much of the trade of Central Europe with America and other parts of the world, is carried on through Holland.

Amsterdam and Rotterdam are the two principal cities. The former, the largest city in The Netherlands, is about the size of Baltimore. It is connected with the ocean by canal, and is noted for its shipping, manufacturing, and diamond cutting. The kings of Holland are crowned at Amsterdam, although they live at The Hague, where the government buildings are situated. The government is a limited monarchy.

Principal cities

Rotterdam, next to Amsterdam in size, is the chief seaport of The Netherlands. Its location, near the mouth of the Rhine, makes it one of the principal ports for entrance to the interior of the continent. This is why Rotterdam is the European terminus for some of the important steamship lines from New York and other parts of the world.

Fig. 543. — A view in the hilly southern portion of Belgium.

Review Questions

1. What is the nature of the country? 2. How has its condition been improved? 3. What are the chief agricultural products? 4. Tell about fishing. 5. Account for the importance of manufacturing. 6. What can you tell about the colonies? 7. What facts favor commerce? 8. Name and locate the principal cities.

Suggestions

1. Find out something about the Dutch flower gardens, where bulbs are raised. 2. Find out why the Pilgrims went to Holland before coming to America? 3. What reasons are there for selecting so small a country as The Netherlands for the peace conferences held at The Hague? 4. Tell what you would expect to see in crossing Holland on a train? 5. What would result, if a dike were to give way? 6. Who is the present monarch?

4. Belgium (Fig. 479)

Map study

1. How does Belgium compare in area with Maryland? With Maine? 2. What countries border Belgium? 3. Draw an outline map of Belgium. 4. Does any part of the United States reach as far north as the latitude of southern Belgium?

Area and population

Holland is smaller than Denmark, but Belgium is even smaller than Holland. Yet it contains more people than The Netherlands, and is, in fact, the most densely settled country in Europe. Find its area and population in the Appendix, and compare it in these respects with your own State.

Government

Belgium, together with parts of France and The Netherlands, once formed the country of *Flanders*, and nearly half the Belgian people still speak the *Flemish* language. Since 1830, Belgium has been an independent country, and the present form of government is a limited monarchy.

The northern part of Belgium is a low plain, but the southern half is much higher, and in places is hilly (Fig. 543).

Most of the kingdom is well suited to agriculture, and more than half the inhabitants are engaged in that occupation. The chief products besides live stock are grain, flax, hemp, fruit, and sugar beets. Among the farm animals, the Flemish horses are especially noted for their great size and strength.

Agriculture

FIG. 544. — Women in Belgium taking milk to market in a cart drawn by dogs.

In Belgium the method of farming is very different from that in the United States. Instead of farms of from one hundred to several thousand acres, as in our country, the Belgian farms usually contain not more than two or three acres. To a large extent, spading takes the place of plowing; and such hand labor, guided by the experience of many generations, secures large crops of the best quality. In spite of such careful cultivation of the soil, however, there are so many people in Belgium that much food has to be imported.

FIG. 545. — A Belgian woman working at the spinning wheel. There is much of this hand work in Belgium.

In the hilly southern part of Belgium there are valuable minerals, especially coal and iron. And, as in England, these two minerals occur near together. Lead, zinc, and silver are also found here; and there is much quarrying of marble and other building stones. More than one hundred thousand men are engaged in mining, and coal is one of the leading exports.

Mining

The northwest slope of the hilly region is one of the world's busiest industrial regions. As in England, the most important kinds of manufacturing are cotton, wool, and iron and steel. Linen and glass also are made. The country is so small, and there are so many waterways and railways, that coal can be carried cheaply to all sections. Manufacturing, therefore, is carried on in all parts of the kingdom, although coal is found only in the south. As a great manufacturing country Bel-

Manufacturing

gium may be compared with Germany and Great Britian.

Like Holland, Belgium is a gateway to and from the interior of Europe. There is no large river, like the Rhine, but two smaller streams, rising in France, are navigable for some distance across the plain. There is also an extensive system of canals.

Commerce

Brussels, the capital and the largest city, is situated in the center of the kingdom. The name *Brussels carpets* suggests one of its industries; but carriages and lace are at present among its most important manufactures. It is a beautiful city, with many picture galleries, museums, and public buildings.

Principal cities

FIG. 546. — Some of the quaint houses of Ghent facing one of the canals on the low plain of northern Belgium.

Besides these waterways, Belgium has more miles of railway, for its size, than any other country. Partly for these reasons the transportation of goods is one of the leading industries.

The Belgians do not possess such valuable colonies as do the Dutch, but they have been prominent in African exploration. It was the Belgian king who sent Stanley to Africa, and the Congo State is a Belgian colony.

ANTWERP, next in size, is about sixty miles from the sea, on the broad lower course of the small Scheldt River. Some of the great steamship lines from New York have their European terminus here, and the port is one of the busiest in Europe. The leading kinds of manufacturing are sugar refining, distilling, lace making, and ship building.

Many other cities and towns are important manufacturing centers. The largest are LIÈGE, the "Birmingham of Belgium," engaged in the manufacture of firearms, cutlery, glass, and various kinds of machinery; and GHENT (Fig. 546), noted for linen and cotton goods, and for machinery.

Review Questions

1. What about the size of this country? 2. What was Flanders? 3. What is the kind of government? 4. What crops are raised? 5. What is the condition of agriculture? 6. Of mining? 7. What can you say about manufacturing? 8. How is commerce favored? 9. What colony has Belgium? 10. Locate and state important facts about the principal cities.

Suggestions

1. Towns in Belgium are often known by two names. Why? 2. Figure out the number of persons per square mile (See Appendix), in Belgium and compare it with the number in New York, or in your own State. 3. Find out some facts about the battle of Waterloo, which was fought in Belgium. From what material is lace made, and how is the work done? 5. Sketch The Netherlands and Belgium together, putting in the chief cities. 6. Make a sand map of them, showing elevation of the land, and the position of some of the dikes.

5. SPAIN AND PORTUGAL (FIG. 493)

Map study

1. What cities in the New World are in about the same latitude as Madrid (Fig. 493)? 2. Compare the area of the Spanish peninsula with that of France (See Appendix); the population. 4. Compare the directions taken by the rivers (Fig. 452). 5. What mountains are on the eastern border? 6. What plateaus and what mountains do you find in the Spanish peninsula? (See Fig. 452.) 7. What islands in the Mediterranean Sea belong to Spain?

There are several important facts that have prevented Spain from holding a high rank among the nations of Europe. One of these is that a large part of the Spanish peninsula is too mountainous and rugged for agriculture. Most of it is a plateau, or table-land, a half mile or more above the level of the sea; and this is crossed by several mountain ranges. The Pyrenees, which extend along the northern border, are lofty mountains; but a range on the southern side, called the Sierra Nevada, is even higher. It has peaks almost as high as those of the Alps. Only along the coast, and in a few of the river valleys, is there much low land. Name and trace the principal rivers.

Reasons why Spain is not one of the Great Powers

1. Mountains and plateaus

The peninsula lies so far south that its climate might be expected to be warm like that of Italy; but while there are some small sections low enough to have a warm climate, most of the peninsula is so elevated that its winter climate is cool.

2. Climate

Lack of rain is another serious drawback. The Spanish peninsula lies south of the belt of west winds, so that vapor is not brought from the ocean as freely as it is in the countries farther north. Much of the land, therefore, is arid; only along the northern and western coasts, including much of Portugal, is there enough rainfall for agriculture.

The people of Spain and Portugal have not been progressive in recent times, which is the greatest disadvantage. At the time of Columbus they were leaders in exploring the world; but since then they have been very slow to advance. They have lost most of their many colonies, chiefly because their methods of government were old-fashioned and cruel. Partly for this reason these nations have become of less and less importance. While England, France, and Ger-

3. Backwardness of the people

many have gone steadily forward, Spain and Portugal have fallen far behind.

FIG. 547.— A village on the plateau of Spain.

Spain is a limited monarchy, and so was Portugal until very recently. In 1910, however, the king of Portugal was expelled from the country, and a republic was established.

Government

Grazing is the principal industry on the arid plateau and on the mountain sides. Cattle, sheep, goats, horses, and mules are raised there. The sheep often wander about in large flocks, sometimes as many as ten thousand together, under the care of a number of shepherds and their dogs. In summer they feed among the mountains, but in winter they are driven down to the more protected lowlands for shelter.

Grazing

There is farming in the rainy section, and wherever the mountain streams make irrigation possible. For centuries the Spaniards have made use of irrigation, and they introduced it into the New World. The chief crops are wheat, corn, and other grains. Quantities of grapes are raised in Spain and Portugal.

Agricultural products

The arid southeastern coast is very productive. One reason for this is the warm climate, due to the Mediterranean (p. 368); another is the number of mountain streams, which supply water for irrigation. Some of the products of this section, besides wheat and corn, are cotton, grapes, olives, figs, dates, oranges, lemons, and rice. Yet this part of Spain is in the same latitude as Virginia.

A peculiar product of the southern part of the peninsula is cork, which is obtained from the bark of a tree, called the cork oak. Much cork is exported.

The Spanish peninsula is remarkably rich in minerals, — lead, silver, copper, and *quicksilver*, or mercury, being among the most valuable. Spain produces more quicksilver than any other country, and the

Mining

FIG. 548.— A Spanish peasant bringing vegetables to market in his donkey cart.

United States is the only country that produces more copper and lead. Coal and iron ore are also found in several parts of the peninsula, but the coal is of no great value. The iron, which is found mainly on the northern slope of the Cantabrian Mountains, occurs in large beds, and is very valuable.

There is little manufacturing in either Spain or Portugal, though there is some in the cities. Even most of the iron ore is sent to other countries to be smelted. One reason for the small amount of manufacturing is that the people are very backward. This is well shown by the fact that two thirds of the Spaniards, and three fourths of the Portuguese, cannot read.

Manufacturing and commerce

FIG. 549. — Country people, or peasants, of Spain in native costume.

Neither Spain nor Portugal has much commerce, though they were once among the leading commercial nations of the world. One might infer that the Spanish peninsula would have great commerce, since it lies between the two busiest seas in the world. The backwardness of the people is one reason for the lack of commerce; and another is the nature of the country. The mountains and plateaus serve as barriers to travel, and tend to separate the two seas instead of connecting them.

There are not many railroads, and the rivers are of little use in transportation. Most of the rivers have too little water for navigation, and as they descend from the plateau their courses are too rapid. Many of them flow in deep, narrow valleys, like our Western canyons, so that they are a hindrance to travel instead of an aid. The principal exception is the Guadalquivir (meaning Great River), which has a wide valley. Boats can go up this river as far as SEVILLE.

MADRID, the capital and the largest city of Spain, has more than a half million inhabitants; but unlike most other large cities so far studied, it is not an important manufacturing center. The reasons for its size are its central location and the fact that it is the seat of the government. All the principal railway lines crossing the peninsula to connect the coastal cities converge at this point.

Principal cities of Spain
1. Madrid

Madrid, with its wide streets, magnificent royal palace, and one of the finest art galleries in the world, is a very attractive city. The surrounding country, however, is far from attractive; for from the streets of Madrid one looks across the country for miles and miles, seeing not a tree, or fence, or house; only the weeds and scattered vegetation of an arid waste. One of the most frequented places in Madrid is an enormous building, with seats for many thousands, in which bullfighting takes place (Fig. 550). This brutal sport is enjoyed by most of the Spaniards as is a baseball or football game by people in our country.

Another place of note among the highlands of Spain is GRANADA, the last stronghold of the Moors, who invaded Spain from Africa,

2. Cities in southern Spain

centuries ago. Granada is now a small and unimportant city, and its principal attraction is the Moorish palace, or Alhambra (Fig. 551), one of the finest examples of Moorish architecture.

manufacturing center as well. The region about Valencia is a beautiful garden, much like that around Los Angeles in southern California. The two regions are much alike both in climate and products.

FIG. 550. — A bull fight watched by thousands of spectators.

On the lowlands west of Granada are SEVILLE and CADIZ, both flourishing cities in former days, when vast stores of plunder were brought from Spanish colonies in the New World. CADIZ is now a fortified naval harbor; and SEVILLE is recovering some of her former commercial importance. It has some manufacturing, especially of tobacco.

MALAGA, which has one of the warmest climates in Europe, is engaged in the shipment of wine, raisins, and grapes. Of what grape does the name remind you?

Principal seaports

BARCELONA and VALENCIA are the leading seaports. Barcelona, the second Spanish city in size, is the most important port and is a textile

The only remnants of her vast foreign possessions now left to Spain are mainly in Africa. These include a few small settlements on the coast of Morocco; a portion of the western coast of Sahara, having little value; and a coastal strip on the Gulf of Guinea, with a few small islands near by. The *Canary Islands*, west of the northern coast of Africa, and the *Balearic Isles*, in the Mediterranean, also belong to Spain.

Colonies of Spain

GIBRALTAR, a steep hill, with cliffs rising boldly on nearly all sides, and with a town at its base, has belonged to England for over two centuries. This hill of solid

Gibraltar

rock (Fig. 552) is, perhaps, the strongest fortification in the world, and guards the entrance to the Mediterranean.

Principal cities of Portugal

Lisbon and Oporto are the chief cities of Portugal. The former, the capital and metropolis, is a very beautiful city. It lies on a broad bay where the Tagus River enters the sea, and has one of the finest of harbors. The lower part of the Douro Valley is one of the richest wine districts in Europe; and Oporto is an important point for its export.

Colonies of Portugal

Portugal, like Spain, has lost much of her foreign territory. The *Azores Islands*, far to the west in the Atlantic, and the *Madeira Islands* to the southwest, belong to this country. The *Cape Verde Islands*, off the west coast of Africa, are also dependencies. In addition, Portugal has large possessions in Africa, and some small ones in Asia.

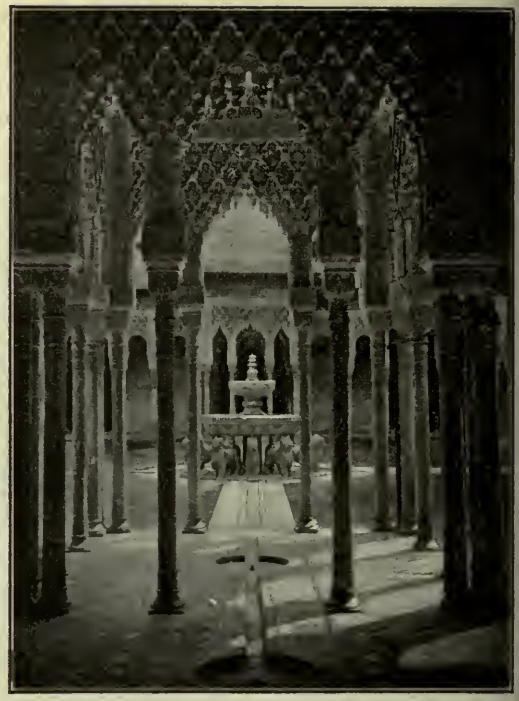


Fig. 551. — The Court of Lions in the Alhambra.

Review Questions

1. What are the surface features of the peninsula? 2. What is its climate? 3. How has the backwardness of the people been a disadvantage? 4. What is the form of government of each country? 5. State the main facts about the grazing. 6. Name the farm products. 7. What minerals are found? 8. Why is manufacturing of so little importance? 9. What can you tell about commerce? 10. Locate and state the principal facts about Madrid. 11. About cities in southern Spain. 12. About the principal seaports of Spain. 13. Name and locate the colonies of Spain.

Fig. 552. — The rock of Gibraltar, seen from the Spanish mainland.

14. For what is Gibraltar important? 15. Locate the principal cities of Portugal, and tell how each is important. 16. What colonies has Portugal?

Suggestions

1. About what portion of the boundary line between Spain and Portugal is formed by rivers? 2. Find out what happened when Portugal became a Republic. 3. Look in the report of the Twelfth Census to see what per cent of our population cannot read. 4. Examine some quicksilver. What are some of its uses? 5. Find out something about the Moors, and the Alhambra, in southern Spain. 6. Find pictures of Moorish architecture. 7. Read Washington Irving's *The Alhambra*. 8. Make a sketch of the Spanish peninsula, including the principal mountains, rivers, and cities. 9. Make a sand map of the peninsula.

6. Switzerland (Fig. 517)

Map study

1. What countries surround Switzerland? 2. What mountains extend along the boundaries of Switzerland? 3. Which of the boundaries is least mountainous? 4. What large rivers rise among the Alps? In what direction does each flow, and into what body of water does it empty? 5. How does the area of Switzerland compare with that of your own State?

Languages and government

Switzerland is the only country of Europe, thus far studied, that has no seacoast. Neither has it a language of its own. Notice what countries surround it. Although it is very small, most of the inhabitants of the southern part speak Italian; those in the western, French; and those in the northern and eastern parts, German. The most common language is German.

This is one of the four European countries that is not a monarchy. Name the other three. The Swiss people, living among the mountains where they could easily defend themselves, or hide from their enemies, declared themselves independent of kings hundreds of years ago, and the country has long been a republic. The republic consists of twenty-two small states, or *cantons*, united somewhat as are our states.

Surface features

The many lofty mountains seriously interfere with agriculture (Fig. 454). The Alps extend completely across the country, and the Jura Mountains skirt the northwestern boundary. These mountains are so rugged that few people live among them, except in the valleys. Between the two mountain districts, however, is a narrow plateau where the surface is much less rugged. It is here that most of the people dwell.

Climate

1. Temperature

We have already learned that the climate of a mountainous country is cool, and that the temperature is lower in high altitudes. At the base of the Alps, chestnut and walnut trees flourish; higher up, these give place to the beech, maple, and other trees of the cool temperate zones; and still higher is a belt of evergreens. Above these come dwarfed trees, shrubs, and grass; and higher still, at an average elevation of about nine thousand feet, the snow line is reached (Fig. 553).

2. Rainfall and glaciers

The lofty Alps condense so much vapor that Switzerland is one of the wettest countries on the continent. On the higher mountains much snow falls; and, sliding down the mountain sides in the form of avalanches, it gathers in the valleys to produce streams of ice, or *glaciers* (Fig. 553). These move slowly down the valleys until they reach a point, below the snow line, where the

ice melts. The Rhone and other rivers are supplied with water by the melting of the Alpine glaciers.

Switzerland is so mountainous that only one acre in nine is fit for the plow.

Agriculture

Yet agriculture is the leading industry of the country. Among the chief farm products are grain and potatoes, raised mainly on the plateau. On the lower lands, especially snows melt from the mountain sides, the goats and cattle are driven to higher and higher pastures (Fig. 553). Such a pasture is called an *alp*, and this is the origin of the name of the range, the Alps.

Where the mountain slopes are too rugged for farming, there is much forest. Therefore, lumber is an important product of the country.

Lumbering and manufacturing

Fig. 553. — Cattle grazing in the mountain pastures high up in the Alps near the snow line.

near the German border, there are extensive vineyards. There is excellent pasturage for cattle and goats among the mountains, and these animals are raised there in great numbers (Fig. 554). In spring and summer, as the

Although there is no good coal in Switzerland, the Swiss do a large amount of manufacturing. Among their principal products are wine, butter, and cheese. Wood carving is also an industry in which many of the Swiss find employ-

FIG. 554. — Cattle on the slopes of the Alps.

ment. During the long winters, the wood from the mountains is shaped into toys, clocks, and other articles. Have you ever seen a Swiss clock?

The Swiss have become widely known for their manufacture of textile goods, such as lace, linen, silk, and cotton goods. They also make much jewelry, especially watches. In some of this work, water power is used, for an abundance of power is supplied by the mountain streams The Swiss are taking a leading place in the production of electricity by water power, carrying it by wire to distant factories.

Much of the manufacturing, however, is done by hand in the homes of the workmen, rather than in large factories. From these statements it may be seen that the Swiss people are very skillful, progressive, and well educated.

There is so much manufacturing that the Swiss need to import many raw materials; and they must distribute their manufactured products. This calls for extensive commerce; but naturally this is not ocean commerce. Why?

Commerce

Their central position among European countries is favorable to inland commerce, and this has become highly developed. It cannot be carried on over interior waterways, for the mountain streams are too swift and shallow for navigation. There is, however, some navigation on the larger lakes.

For their commerce the Swiss have been obliged to depend mainly upon roads and railways. It has been no easy matter to build such highways in so mountainous a country, but

FIG. 555. — A Swiss peasant girl in native costume.

it has been done. No country in the world has better wagon roads than Switzerland; and no country has overcome greater difficulties in the building of railways.

Railroads pierce the mountains in several directions, connecting Switzerland with foreign countries. One of the most important is the St. Gothard Railway, which connects Switzerland with Italy by the St. Gothard Tunnel. This is one of the longest tunnels in the world, and is a marvel of engineering skill. Before reaching the main tunnel, in traveling north, several smaller ones are entered, through which the train winds in a spiral course. A passenger twice comes out of the mountain almost directly over the point where he entered it. There, far below him, he can see the two places at which the train entered (Fig. 556). Such winding tunnels are necessary, because the grade is so steep that a train could not be drawn directly up a straight track. The main tunnel, which is nine and one fourth miles long, is quite straight. The *Simplon Tunnel*, even longer than the St. Gothard, now pierces the Alps a short distance farther west; and a third one, nearly five miles long, connecting with the Simplon Road, has been completed.

Fig. 556. — The St. Gothard Railway on the south side of the Alps. Here are three tracks one above the other, for the railway enters the mountain and swings around in two great circles, coming out each time at a higher level.

Scenery and tourists

While the mountains have interfered with the building of roads and railways, and with agriculture, they are of great value to Switzerland in another way. They present such wonderful scenery that Switzerland is the most noted summer resort of Europe; and the entertainment of visitors is one of the leading occupations.

There are so many hotels and so many fine roads, that one can easily go in almost any direction. It is possible to reach even the tops of several of the mountains by rail. Every summer many Americans cross the ocean to enjoy the Swiss scenery.

Fig. 557. — The snow-capped Alps as seen from Mt. Pilatus, with Lake Lucerne in the foreground.

Many of the Swiss cities and towns are beautifully situated upon lakes, and within sight of mountain peaks always covered with snow. LUCERNE, for example, is surrounded by grand and varied scenery. The city is on Lake Lucerne, and lofty mountains rise close at hand (Fig. 557). Mounts Rigi and Pilatus are near, and from their summits one obtains wonderful views of the lake, more than four thousand feet below, bordered by green meadows and numerous villages. In several directions, as far as the eye can reach, are the snow-covered crests of stupendous, jagged mountains.

Leading cities

ZURICH, the largest city in Switzerland, is situated on Lake Zurich. It is an important railway center, being connected with Italy by the St. Gothard Railway, while other railways bring it into touch with France, Germany, and Austria. These railways are especially valuable, bringing foods, as well as silk and other raw materials, for manufacture. Therefore Zurich is the center of one of the principal manufacturing districts. It is noted for the manufacture of silks, cotton, chocolate, and machinery.

BASEL, the second largest city in Switzerland, is the busiest railway center in the country. It is on the main line of the St. Gothard Railway, and on the Rhine at the point where it enters Germany from Switzerland. Why is its position, near both France and Germany, favorable to manufacturing?

GENEVA, situated on the lower end of Lake Geneva, near where the Rhone enters France, is the third city of the republic, and a noted educational center. There is much manufacturing, among the important articles made being jewelry and scientific instruments.

BERNE, the capital, is centrally located; but it is a small city because it is not favorably situated for commerce.

Review Questions

1. What languages are spoken? 2. What can you tell about the government? 3. Describe the surface of Switzerland. 4. The climate. 5. State the principal facts about agriculture. 6. About lumbering and manufacturing. 7. What is the condition of commerce? 8. Tell about the roads and railways. 9. Why is Switzerland so attractive to tourists? 10. Locate and state the main facts about Zurich. 11. Basel. 12. Geneva and Berne.

Suggestions

1. What reasons are there for giving particular attention to the study of English and other foreign languages in the Swiss schools? 2. Why has Switzerland, unlike many European countries, not come into possession of colonies? 3. Find the meaning of "referendum" and "popular initiative" in Swiss legislation. 4. Switzerland has long been selected as a place of refuge for persecuted people and political refugees from other nations. Why? 5. Read that portion of the story of William Tell which is supposed to have occurred about Lake Lucerne. 6. Write a story describing a visit to Switzerland.

7. GREECE (FIG. 517)

Map study

1. What country borders Greece on the north? 2. What seas lie on the eastern and western sides? 3. Locate Corfu and the Ionian Islands, which are a part of Greece. 4. Make an outline map of Greece.

Surface and climate

Greece occupies the southern end of a large peninsula, called the Balkan Peninsula. Owing to many short mountain ranges, extending in different directions, the surface of the country is quite rugged, and large sections are unfit for farming. Yet there are many small, fertile valleys. The coast line is very irregular, with numerous peninsulas, islands, deep bays, and fine harbors, formed by the sinking of the mountainous land.

The Mediterranean causes a warm, pleasant climate, as in southern Italy. In Greece, however, as in Italy, the

rainfall, which is moderate in winter, is so light in summer that irrigation is necessary for agriculture.

Its former greatness

Italy, Spain, and Portugal were once far more important, in comparison with other countries, than at present. The same is true of Greece.

The country in Europe that has perhaps had the greatest influence upon the rest of the world is this small one. The Romans received many of their beliefs and customs from Greece, and since many of our customs came from the Romans, we also are greatly indebted to the Greeks. They were a highly cultivated people, and the beauty and artistic perfection of their sculpture, and of some of their buildings, have never been equaled.

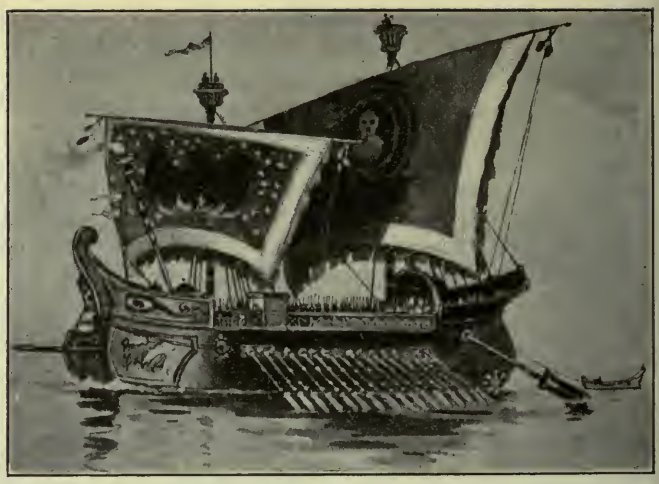


FIG. 558. — A Greek ship, used 700 years before Christ. Besides sails, long oars were used for driving the boat through the water.

Rome finally conquered Greece, and became the leading country of the world. After the decline of the Roman Empire, other people from the north invaded Greece; and finally the Turks entered the country and carried ruin to this, as to other parts of the Balkan Peninsula. Greece is now independent, and is a limited monarchy.

Its later history

In this little country there are few natural resources. There is no coal, and therefore little manufacturing. There is some mining of iron ore, lead, and zinc; but the principal occupations are herding and farming. Large numbers of sheep and goats are raised; and the chief farm products are grain, tobacco, olives, and fruits. Among the latter is the small variety of grape known as the currant. Currants, together with raisin grapes, are cultivated in large quantities on the steep hillsides; after being gathered, they are spread out to dry, and are sold as dried fruit.

Principal industries

FIG. 559. — A Greek peasant in native costume.

The neighborhood of the sea led the ancient Greeks to adopt a seafaring life, and they still carry on an extensive foreign trade. Many are also engaged in fishing, and in securing bath sponges from the shallow sea bottom among the Greek islands.

Leading city

The capital and the most important city is ATHENS, once the most famous city of the world. It was a well-known city at the time of

Christ, and both Athens and Corinth are mentioned in the Bible. Athens is still an important city, with more than a hundred thousand inhabitants. It is situated inland six miles from its port, PIRÆUS. The principal streets of Athens are quite modern; but ruins of the ancient city are still numerous. The most noted buildings, and some of the finest temples of ancient Greece, stood upon the Acropolis (Fig. 560), a level-topped, rocky hill with steep sides. This stronghold was the natural center for settlements on the surrounding plain.

FIG. 560. — The Acropolis at Athens.

The many islands in the neighborhood of Greece are either tops of mountains rising out of the sea, or else volcanic cones. Now and then we hear of an earthquake shock in this island region, or *archipelago*, showing that the mountains are still growing. The largest island near Greece is *Crete* (Fig. 450), which, like the smaller islands, is inhabited mainly by Greeks. It is still controlled by the Turks.

Islands near Greece

1. Describe the surface and climate of Greece. 2. Tell about its former greatness. 3. State facts about its later history. 4. What are the principal industries? 5. Tell about the leading city. 6. What can you say about the islands near Greece?

Review Questions

1. Read some stories of the ancient Greeks. One of the most interesting is the Odyssey. 2. Learn some facts about Homer, Plato, and other noted Greeks. 3. Read about the defense of the Pass of Thermopylæ. 4. Collect pictures of the ruins in Athens.

Suggestions

8. Turkey and Balkan Countries (Fig. 517)

Map study

1. Bound each of these countries. 2. Trace the course of the Danube. 3. What countries lie south of the Danube. 4. How does the number of large cities here compare with the number in Germany? 5. Compare the area of Turkey in Europe with that of your own State. 6. Find the straits of Bosporus. The straits called the Dardanelles. 7. What is the name of the sea between these two straits?

Boundaries and surface features

These countries are situated on one of the largest peninsulas of Europe, called the Balkan Peninsula. It is bounded on the west by the Adriatic and Ionian Seas, and on the east by the Black and Ægean Seas. Since the peninsula broadens toward the north, it has a very long land boundary, extending from the mouth of the Danube River to the head of the Adriatic Sea.

On the whole, this is a very mountainous peninsula, though there are many valleys and small plains among the mountains. One portion, in northern Bulgaria and Roumania, is a broad plain crossed by the Danube.

Climate

In so mountainous a country there are different kinds of climate. On the lowlands, along the southern and western coasts, the climate is warm, as elsewhere near the Mediterranean. But in the northeast, near Russia, while the summers are warm, the winters are very cold. In that season, icy winds sweep down from the Russian plains, and the Danube freezes over. The mountain slopes also have a cold climate.

There is also much difference in rainfall. On the slopes of the mountains, and in the northern part of the peninsula, there is rainfall enough for agriculture. But in some of the interior valleys, and in parts of the southern part of the peninsula, there is so little rainfall in summer that irrigation is necessary.

Fig. 561. — A Turkish woman in Constantinople.

Closeness to Asia; effects on plants, animals, and people

The eastern part of the Balkan Peninsula comes so close to Asia that it has been called a "bridge" between Europe and Asia. At two points, the Dardanelles and the Bosporus (Fig. 565), the two continents are separated only by narrow straits. Animals and plants have crossed these barriers so easily that there is a mixture of European and Asiatic species in that part of Europe.

This region has also been a bridge for the passage of many peoples. Romans, Slavs, and finally the Mohammedan Turks from Asia, have brought the Balkan Peninsula under their rule. Wherever the Turks went, they brought ruin; and for four centuries, while the rest of Europe was advancing, they held this region in such control that almost all progress was checked. During the nineteenth century, however, many of the people have thrown off

the Turkish yoke, so that the peninsula is now divided among several nations. To-day Turkey in Europe is less than one quarter as large as it was a hundred years ago.

Countries now occupying the Peninsula

Aside from Turkey, the separate countries of the Balkan Peninsula are Montenegro, Servia, Roumania, Bulgaria, and Greece. Each of these is now independent, Bulgaria, in 1908, being the last to throw off the Turkish yoke.

FIG. 562. — A Roumanian peasant in native costume.

Montenegro

The tiny country of Montenegro, which is smaller than the State of Connecticut, is of slight importance. Its soil is so poor that there is little agriculture; there is less manufacturing, and no railway. The principal occupation is cattle raising. *Cettinje*, the capital, has a population of less than five thousand.

Servia

Servia, next to Montenegro in size, has a very rugged surface, and much of the country is forest covered. Only a small portion is cultivated. Among the leading farm products are corn, wheat, and other grains, similar to those of Hungary, which borders Servia on the north. There is also much fruit, especially grapes and plums, which, when dried, are sold as raisins and prunes. Many cattle, sheep, and pigs are raised.

The industries of Servia are only partly developed. For example, although coal, iron, silver, gold, and other metals are known to exist, there is very little mining; nor is there much manufacturing. It will require more time to recover from the centuries of Turkish misrule.

The capital of the kingdom is BELGRADE, a city with a fine location on the navigable Danube.

Roumania and Bulgaria

Roumania and Bulgaria are separated by the Danube for a long distance. Thus, together, they control its lower course. This is a fact of much importance to Austria-Hungary. Why?

Broad plains, suited to agriculture, border the Danube in both countries, though the plains are far more extensive in Roumania than in Bulgaria. Naturally, therefore, there is much farming. In both countries wheat and other grains are among the chief crops.

Southern Bulgaria is protected from the cold north winds by the Balkan Mountains. It therefore has such a warm climate that the products differ much from those north of the mountains. Some of these are the mulberry for the silkworm, and roses for the valuable perfume, attar of roses.

The Turks, who are Mohammedans, have ideas and customs that are unlike those of other Europeans. They have

been unprogressive, and unwilling to grant rights to the many Christians who live in Turkey. Their ruler, or *Sultan*, until recently has had absolute power, which he has often used very cruelly; and the government has been the worst in Europe. Recently it has begun to improve. The majority of the Turks are both ignorant and poor; and they have not been encouraged to develop the resources of their land.

Turkey in Europe

1. Character of the people, and of government

Fig. 564. — A Turkish lady in native costume.

The extensive forests that once covered the mountain slopes have been nearly destroyed; and broad areas of farm land are cultivated by the crude methods of early centuries. Among the principal crops are wheat, corn, flax, hemp, and tobacco. Figs, and grapes for raisins, are also raised. Cattle and sheep are numerous, and tame buffaloes and oxen are in common use as farm animals.

2. Industries

Turkey supplies little except raw materials. Even valuable mineral deposits are almost unworked, and there is little manufacturing aside from hand-made goods. Among the latter are the famous Turkish rugs, and some very beautiful articles in leather and metal, showing that the Turks have much artistic skill. With so little industry, there is, naturally, almost no means of transportation; in fact the roads are everywhere bad, and there are almost no railways.

Constantinople, the capital of the Ottoman Empire, as Turkey is often

Fig. 565. — Constantinople and the Bosporus. The land on the other side of the strait is in Asia.

Fig. 563. — A street scene in Constantinople.

called, has been famous for many centuries. Situated on the beautiful, river-like outlet of the Black Sea, called the Bosporus (Fig. 565), it commands the channel through which the commerce of the Black Sea must pass. This is a natural site for a city; for it is the point where the crossing from Europe to Asia can best be made.

3. Chief city

The site of Constantinople is so favorable for a city that it was the seat of a Greek colony even before the days of Christ. Later the Roman Emperor Constantine named the city after himself (*Constantine* and *polis*, meaning city), and made it the capital of the Roman Empire. For centuries it was noted as one of the richest and most prosperous cities of Europe.

After being captured by the Turks, however, it lost much of its beauty, though some of the ancient splendor still remains (Fig. 565). There are beautiful palaces, mosques, and other costly buildings; but side by side with them are the dwellings of the common people, who live in squalid poverty. The houses, street scenes, people, and customs remind one of Asia rather than of Europe. How does it rank in size with other large European cities? With the large cities of the United States? (See Appendix of Statistics.)

Review Questions

1. Describe the boundaries and surface of the Balkan Peninsula. 2. The climate. 3. What have been some of the effects of the nearness of this peninsula to Asia on plants, animals, and people? 4. What countries now occupy this peninsula? Locate each. 5. Tell what you can about Montenegro. 6. About Servia. 7. Name and locate the capital. 8. What are the agricultural products of Roumania and Bulgaria? 9. What can you say about the other industries? 10. Name and locate the chief cities. 11. What can you tell about the character of the people and government of Turkey? 12. What are the industries? 13. Why is the location of its chief city so favorable? 14. State the history and present importance of this city.

Suggestions

1. What is the boundary between Turkey in Europe and Turkey in Asia? 2. What parts of Africa and Asia belong to the Ottoman Empire? 3. Name the Balkan countries. 4. Name and locate the principal cities. 5. Russia would greatly like to get possession of Constantinople. Why? 6. Make a sketch map of the Balkan Peninsula, with boundaries of countries, the course of the Danube, and the position of the capitals.

General Review Questions

1. What countries of Europe suffer, to some extent, for want of rain? 2. What is the largest river of Europe? Is it the most important? Why? 3. What rivers rise in the Alps? 4. Through what countries does each flow? 5. What large cities are located upon each? 6. Make a sketch map of Europe, showing the location of the chief rivers and cities. 7. Name and locate the mountain ranges of Europe. Include these in your sketch. 8. On your sketch map, draw the boundaries of the countries. 9. What three countries are republics? 10. What two have a despotic form of government? 11. Which countries border on the Atlantic Ocean? 12. On the Mediterranean Sea? 13. Which have a very good position for commerce? Why? 14. Which have a very poor position for commerce? Why? 15. Name the leading agricultural countries of Europe. 16. Name the leading manufacturing countries. 17. Bound each of the Great Powers of Europe. 18. Name and locate the capital of each of these Great Powers. Put them on your sketch map. 19. Name the capital of each of the Lesser Powers.

Comparisons with North America

1. Compare the climate of western Europe with that of the west coast of North America. 2. Make the same comparison for the eastern parts of the two continents. 3. Which continent has the most irregular coast line? 4. Name and locate the principal mountain ranges in each continent. Which continent has the advantage as to the direction of the ranges? Why? 5. Name and locate the principal rivers in each continent. Which are the largest in each case? 6. How do our larger Western States compare in area with France and Germany? In population? 7. What is the prevailing

kind of government in Europe? In North America? 8. Which European country has the best location for world commerce? Why? 9. Which is the best situated for continental commerce? Why? 10. Which country of North America has the most favorable position for trade? How? 11. Compare in population the five largest European cities with the five largest in North America (See Appendix). 12. Name and locate the five largest seaports of Europe (Fig. 450). 13. How do they compare in population with New York, Philadelphia, Boston, Baltimore, and San Francisco? 14. Name and locate the five largest interior cities, and compare their population with that of Chicago, St. Louis, Cleveland, Pittsburg, and Detroit. 15. What cities of Europe and North America are near the 46th parallel of latitude? The 50th? The 60th? 16. Name some agricultural products common to both Europe and the United States. 17. Name others that are found in the United States, but not in Europe. Why this difference? 18. Name the chief wheat-producing countries of Europe and North America. 19. In what countries of Europe is raw silk produced? Why do we not raise silkworms? 20. Make a list of the European countries which have extensive coal deposits. 21. Which countries have little or none? What is the effect on the industries in each case? 22. Which countries have little or no mining? 23. Which countries have important manufacturing industries? Which have very little manufacturing? Give reasons for this difference. 24. With which group would the United States be classed with regard to mining and manufacturing? 25. Which of the European nations have you seen represented on our streets? 26. Which one of the European countries would you prefer to visit? Why?


ASIA
Scale of Miles
0 200 400 600 800 1000
Cities with over 1,000,000 ..... Tokyo
Cities with 500,000 to 1,000,000 ..... Bombay
Cities with 200,000 to 500,000 ..... Ningpo
Smaller Places ..... Lahore
Capitals with less than 200,000 COLOMBO
Capitals ◎ Other Cities ○
Railroads
ARCTIC OCEAN
ATLANTIC OCEAN
PACIFIC OCEAN
INDIAN OCEAN
EUROPEAN RUSSIA
SIBERIA
CENTRAL ASIA
CHINESE EMPIRE
JAPAN EMPIRE
TURKISH EMPIRE
PERSIA
ARABIA
INDIA
FRENCH INDO-CHINA
SIAM
PHILIPPINE ISLANDS
BORNEO
NEW GUINEA
Longitude East from Greenwich
EQUATOR
TROPIC OF CANCER
ARCTIC CIRCLE
WILLIAMS ENGRAVING CO., N.Y.

FIG. 566.

PART VII. ASIA, AFRICA, AUSTRALIA, AND ISLAND GROUPS

SECTION I. ASIA

Map study

1. Through what zones does Asia extend (Fig. 566)? 2. Where are the highest mountains and plateaus? 3. What large rivers have their sources in that region? In what direction does each flow? 4. In what sections are there extensive plains (Fig. 568)? 5. What large inland seas and lakes do you find which have no outlet? 6. What three large peninsulas are on the southern side? 7. What two are on the eastern side? 8. What islands lie east of Asia? 9. Name the large gulfs and seas along the coast. 10. How does Asia compare in size with Europe? 11. Find Asia on the globe. 12. How could you reach it, if you wished to go there? 13. What strait separates Asia from America? 14. What is the name of the isthmus connecting Asia and Africa?

1. General Facts about Asia

Area and population

The main part of Eurasia, which we call Asia, is larger than any other continent. Indeed, it is greater than North and South America together, or Europe and Africa together.

It has more inhabitants, also, than any other continent. More than one half of all the persons on the earth live in Asia; and in the one country of China there are more people than in all the countries of Europe combined.

It might be inferred that Asia would be one of the best known of the continents; for it has the oldest civilization, and is very near to Europe. Besides, a flourishing trade was carried on between Europe and the Indies, long before the New World was discovered. The fact is, however, that Asia, next to Africa, is the least known among the continents. Let us find some of the reasons for this.

Why little is known of Asia

In the first place, although Europe and Asia are close together, their leading countries are separated by arid country and desert, which is more difficult to cross than either mountains or the sea.

1. Because of arid and desert land in the west

The two great seas in southwestern Asia, the Caspian and Aral seas, have no outlets and are salt, although large rivers pour volumes of fresh water into them. What are the names of these rivers? How does the area of these lakes compare with that of Lake Superior, the largest of our Great Lakes (See Appendix)? While these salt seas are of great size, the fact that they have no outlets tells very clearly that the climate here is dry, for the water evaporates faster than the rivers can pour it in.

Most of the vast region between the Irtish River and Africa is either desert or arid land (Fig. 569). Estimate the


RELIEF MAP
OF
EURASIA
Modeled by
EDWIN E HOWE
SCALES


PHYSICAL MAP OF
ASIA
Scale of Miles
0 200 400 600 800 1000 1200
KEY
Over 6,500 ft.
From 1,650 to 6,500 ft.
From 650 to 1,650 ft.
From 0 to 650 ft.
Sea Level
From 0 to 6,500 ft.
From 6,500 to 13,000 ft.
Below 13,000 ft.
ARCTIC OCEAN
PACIFIC OCEAN
INDIAN OCEAN
EUROPE
AFRICA
ARABIAN SEA
BAY OF BENGAL
SOUTH CHINA SEA
EAST CHINA SEA
Yellow Sea
JAPAN SEA
SEA OF OKHOTSK
BERING SEA
MEDITERRANEAN SEA
BLACK SEA
CASPIAN SEA
ARAL SEA
RED SEA
Persian Gulf
NORTH SEA
Kara Sea
SIBERIAN TUNDRA
GREAT SIBERIAN PLAIN
KIRGHIZ STEPPES
Plains of Turan
PLATEAU OF IRAN
PLATEAU OF TIBET
KUENLUN
TIAN SHAN
HIMALAYA MTS.
HINDU KUSH MTS.
KARAKORAM MTS.
NAN-SHAN
ALTAI MTS.
Plateau of Kobdo
Plateau of Mongolia
DESERT OF GOBI
YABLONOI MTS.
KHIN-GAN MTS.
Plains of Manchuria
STANOVOI MTS.
VERKHOIANSKOI MTS.
Great Plain of China
PLAINS OF INDIA
Plateau of Deccan
WESTERN GHATS
EASTERN GHATS
PLATEAU OF ARABIA
PENINSULA OF ARABIA
Great Arabian Desert
Syrian Desert
Plains of Mesopotamia
Kurdistan Highlands
Armenian Pl.
Plateau of Asia Minor
TAURUS MTS.
CAUCASUS MTS.
ELBURZ MTS.
URAL MTS.
Mt. Elbruz
Mt. Ararat
Mt. Sinai
Dead Sea
Mt. Everest
Lake Baikal
Lake Balkash
Ob R.
Irtish R.
Yenisei R.
Lena R.
Amur R.
Hoang-ho
Yangtse-kiang
Mekong R.
Salween R.
Brahmaputra
Ganges R.
Indus R.
Sutlej R.
Euphrates R.
Tigris R.
Amu R.
Syr R.
Ural R.
Volga R.
Nile R.
ISTHMUS OF SUEZ
CRETE
CYPRUS
NOVA ZEMBLA
YALMAL PEN.
TAIMYR PEN.
C. Chelyuskin
NEW SIBERIA IS.
WRANGELL I.
C. Deshnef
ARCTIC CIRCLE
Gulf of Anadyr
KAMCHATKA PENINSULA
Cape Lopatka
ALEUTIAN IS.
KURILE IS.
SAKHALIN ISLAND
G. of Tartary
YEZO
NIPON
Fujiyama
SHIKOKU
KIUSHIU
LIUKIU IS.
KOREA PEN.
Pechili
FORMOSA
TROPIC OF CANCER
HAINAN
LUZON
PHILIPPINE ISLANDS
MINDANAO
PALAWAN
INDO-CHINA PENINSULA
Gulf of Siam
C. Cambodia
MALAY PENINSULA
Strait of Malakka
SUMATRA
BORNEO
CELEBES
MOLUCCA OR SPICE IS.
NEW GUINEA
EQUATOR
ANDAMAN IS.
NICOBAR IS.
CEYLON
Cape Comorin
LACCADIVE ISLANDS
MALDIVE ISLANDS
Longitude East from Greenwich
WILLIAMS ENGRAVING CO., N.Y.

FIG. 568.

FIG. 569. — A caravan on the desert of Persia.

distance across this arid country from east to west. When you realize that it is two or three thousand miles, you can see what a barrier this section must always have been to commerce and to acquaintance between the people of the two continents.

2. Because of the extreme cold in the north

In the second place, we can readily see why Siberia — which makes up more than one fourth of the whole continent — should have been little visited, for most of it is a very cold country. Note how much of it lies in the frigid zone. In this section, called the *tundras*, the ground is frozen to a great depth all the year round.

The main slope of this vast plain is toward the north. Trace its three great rivers. What are their names? Like the Mackenzie River in North America, they have been of little help in exploring the country. Why?

For several reasons, the vast central portion of Asia also has been difficult to explore. On Figure 567 observe how

FIG. 570. — The Snowy Range in the Himalaya Mountains, the loftiest mountains in the world.

many mountain chains are found there. Among them are the Himalayas, just north of India, the loftiest mountain range in the world (Fig. 570). Mt. Everest, the highest peak, rises over twenty-nine thousand feet, or five and one half miles above the level of the sea. Find this mountain on Figure 566. How does it compare in height with Mont Blanc in the Alps? (See Appendix.)

3. Because of the plateaus, mountains, and deserts in the central part

There are vast stretches of level land among these mountains, but they are plateaus, rather than low plains. One of them, the plateau of Tibet, is from two to three miles above the level of the sea, — higher than the peaks of most lofty mountains. You know (p. 25) that the summits of mountains are cold; so, also, are high plateaus. Thus most of the highland of Central Asia has a cool or a cold climate.

FIG. 571. — Fujiama, a perfect volcanic cone in Japan.

Much rain and snow falls on the edges of this vast highland. Note the rivers that find their sources there. The three on the north side, crossing Siberia, have already been mentioned. What are their names? What three are found on the east side, emptying into the Pacific? Name several on the south side. From this you see that most of the great rivers of Asia rise in this highland region, just as most of those of western Europe rise in the Alps.

Since the winds lose their vapor on the margin of this great highland, its interior is largely either desert or arid land. Find the Desert of Gobi.

A region so mountainous, and so cold and dry as Central Asia, is difficult to explore; and it is not strange that we know little about it even to-day.

4. Because of the character of the people

From what has been said about the western, northern, and central parts of the continent, it is evident that there can be but few inhabitants in those sections. The vast hordes of people living in Asia must, therefore, dwell in the eastern and southern parts. Most of them live in China, Japan, and India (Fig. 572).

How well do we know those parts of the continent? There it is the character of the people, rather than of the country, that has prevented their being better known. The Chinese, for instance, of whom there are such great numbers, are very different from Europeans and Americans, and, until quite recently, they would have nothing to do with

foreigners. They have not been willing to admit white people into their country even as visitors. How, then, could we find out much about them and their country?

Until about fifty years ago, the Japanese felt and acted in the same way toward us. India is better known, because it has long been under the control of the British.

In recent years the situation has greatly changed, and we are now rapidly becoming acquainted with the Asiatic people and their continent.

2. The Turkish, or Ottoman, Empire

Although Constantinople, the capital of the Turkish Empire, is in Europe, Turkey controls ten times as much land in Asia as in Europe.

The part of Asia which Turkey controls is of peculiar interest to us. It is here that many of the places mentioned in the Bible are located (Fig. 576); and here Jesus was born, as well as the prophet Mohammed. It was from this center, also, that much of the ancient civilization spread along the shores of the Mediterranean. **Why of special interest**

A large part of Turkey in Asia is table-land, crossed by short mountain ranges. There are also a number of extinct volcanoes, such as Mount Ararat. **Surface and climate**

There is little rainfall except along the coast of the Mediterranean and Black

FIG. 572. — Map showing Density of Population of Asia.

FIG. 573. — Some of the wild animals of Asia.

HOLY LAND
Scale of Miles
0 5 10 15 20 25
Railroads
Highways
Dry River Bed
Part of Jordan Valley below Sea Level, shown in purple
MEDITERRANEAN SEA
UPPER GALILEE
LOWER GALILEE
GAULANITIS
DECAPOLIS
SAMARIA
PEREA
JUDÆA
IDUMÆA
AMMONITIS
MOABITIS
DAROMA
Kedesh
Waters of Merom
Achzib
Ptolemais
(Accho)
R. Kishon
Mt. Carmel
Chorazin
Bethsaida Julias
Capernaum
Magdala
Sea of Galilee
Tiberias
City of Gergesenes
Hippos
To Damascus
Cana
Nazareth
Mt. Tabor
Nain
Plain of Esdraelon
Hieromax
Gadarenes R.
Dor
Cæsarea
Bethabara
Arbela
Scythopolis
(Beth-Shean)
Pella
Salim
(Enon)
Dion?
Plain of Sharon
Samaria
Mt. Ebal
Enon
Gerasa
Shechem
Sychar
Jacob's Well
R. Jabbok
Mt. Gerizim
Antipatris
River Jordan
Mt. Gilead
Joppa
Shiloh
Ramoth Gilead
MTS. OF EPHRAIM
Lydda
Bethel
Rabbath Ammon
(Philadelphia)
Jabneh
(Jamnia)
Rama
Jericho
Emmaus
Bethpage
Azotus
JERUSALEM
Mt. of Olives
Bethany
Plain of Shephelah
Askalon
Bethlehem
Kedron
Mt. Nebo
DEAD SEA
Machærus
Hebron
MTS. OF JUDÆA
Gaza
R. Arnon
Beer-sheba
Ghuzzeh
Wilderness of Judæa
34° 30′
35°
35° 30′
36°
33°
32° 30′
32°
31° 30′
Longitude East from Greenwich
Williams Engraving Co., N.Y.

FIG. 576.

seas. The country is, therefore, mainly arid or desert; the streams are usually short and shallow, and there are numerous salt lakes. Point out the two principal rivers (Fig. 576).

Some of the mountain slopes are covered with forest; but most of the country is open, and suited mainly to herding, though there is some agriculture. In the valleys wheat, grapes, olives, figs, oranges, and cotton are raised, usually by the aid of irrigation. Both the herding and farming are carried on in much the same way as in the Bible times. The valuable minerals are scarcely worked at all; and there is almost no manufacturing except that done by hand (Fig. 575). Some of this work, however, especially tapestry and rugs is very beautiful.

Industries, products, and chief cities

SMYRNA, the leading seaport, has a fine harbor and has been growing very rapidly now that railroads extend inland from this point. Locate it. Find TREBIZOND, an important port on the Black Sea.

FIG. 574. — A Mohammedan priest in eastern Asia.

There are two parts of Turkey in Asia that merit special study on account of their history: namely, (1) the *Holy Land*, and (2) the valley of the Euphrates and Tigris rivers, or *Mesopotamia*.

Two especially important parts of Turkey in Asia

The Holy Land has a nearly straight coast with no good harbors, and back of it is a narrow coastal plain. Beyond this are two low mountain ranges, and between them is the remarkable depression at the bottom of which is the Dead Sea. While the village of Hebron (Fig. 576), on the western mountain range, is about three thousand feet above sea level, the surface of the Dead Sea, a few miles to the east, is almost thirteen hun-

1. The Holy Land

(1) *Its surface and climate*

FIG. 575. — Native spinning wheels in Palestine, using the same methods as in the days of Christ.

FIG. 577. — Tiberias and the Sea of Galilee in the Holy Land.

dred feet below sea level. This is, in fact, the deepest depression on the lands of the earth.

The river Jordan flows along this depression coming out of a fresh-water lake, called the Sea of Galilee (Fig. 577), and emptying into the Dead Sea. But this is such a desert region that the water evaporates too fast for the Dead Sea to have an outlet. The sea is so salt that no living things can exist there, and the salt makes the water so dense that a person cannot even sink in it. The Jordan Valley and the Dead Sea lie no farther south than southern Alabama; yet, partly because the region is so low and inclosed, its climate is almost tropical.

(2) *Important events that happened here*

Before its possession by the Jews, this region was divided into small countries, often under the rule of their more advanced and powerful neighbors in northwestern Africa, the Egyptians. Then the Jews entered this "promised land" and created a kingdom which rose to its highest power under King Solomon. It was here that many of the events in the Old Testament took place, including the advance in religion from the worship of many gods to the belief in one all-powerful God. Persians, Egyptians, and Romans later ruled over Palestine; and it was during the control of the Romans that Jesus was born at BETHLEHEM (Fig. 578). What events in the life of Jesus can you mention that occurred at some of the places marked on the map (Fig. 576)?

(3) *Former products and commerce of Palestine*

At that time, as we learn from the Bible, the region was highly developed. Wheat was raised upon the uplands, and olives, figs, and grapes in the valleys, while herds of sheep were pastured on

FIG. 578. — Pilgrims entering Bethlehem on Christmas day. It was here that Jesus was born.

FIG. 579. — A view of Jerusalem as it appears to-day.

the plateaus and mountains. Recall events from the Bible that indicate these occupations.

Palestine lay on the great caravan route which, leading from Egypt to the distant East, ran northward, as far as DAMASCUS (Fig. 566), in order to avoid the Syrian desert. Throngs of people, therefore, passed this way. JERUSALEM (Fig. 579), the capital, was a large city, situated upon a lofty elevation that made it an important stronghold.

Palestine is now visited by many Christians, and also by Mohammedan pilgrims who believe that Mohammed ascended to heaven from Jerusalem. The usual mode of travel is by mule or camel, as in olden times. A short railway now climbs the mountains from JOPPA, on the seacoast, to Jerusalem, and another has been begun following the old caravan route past NAZARETH, and the Sea of Galilee, to DAMASCUS. Trace these two lines.

(4) *Present method of travel*

Mesopotamia, which includes the fertile valleys of the Tigris and Euphrates rivers, has suffered the same fate as the rest of Turkey in Asia. It was formerly crossed by a network of irrigation canals, and was called in the Bible "a garden of the Lord." But it has been overrun by the Arabs and Turks, until it is now almost a waste. Babylon and Nineveh, once great cities, and the seats of a wonderful civilization, are now marked only by mounds of ruins. The site of the Tower of Babel is believed to have been at Babylon, and the ruins of the palace of Nebuchadnezzar are still to be seen there.

2. Mesopotamia

(1) *Its ancient history*

There is now little commerce in this land, though steamboats can go up the Tigris as far as BAGDAD. This city, situated on the caravan route to the East, was of much importance in ancient times. There is still some trade between Europe and India along this route. The building of a railroad to Bagdad will probably greatly increase its importance.

(2) *Its present importance*

3. ARABIA, PERSIA, AND AFGHANISTAN

The Arabian Peninsula is an arid plateau, several thousand feet in eleva-

tion. What waters border it? The climate is hot along the coast, but cooler on the plateau and among the mountains.

Arabia

There are few people in Arabia, and these are largely nomadic. Coffee is raised in the southwest, near MOCHA; the date palm flourishes in many places; and fruits and vegetables are produced in many of the valleys. Agriculture is possible in most parts only by means of irrigation. Cattle, sheep, goats, donkeys, horses, and camels are raised in large numbers.

MECCA, a city about fifty miles from the west coast, is sacred to all Mohammedans (Fig. 574). It was here that Mohammed was born, and every Mohammedan wishes to make a pilgrimage to it at least once during his lifetime. Most of these pilgrims come by sea, and every year both the city, and the roads leading to it, are crowded with them. Now, however, a railroad to Mecca is being built.

Most of the Arabian peninsula is independent of Turkey, though it has no well-organized government of its own. Turkey controls the west coast and the Persian Gulf coast as far as *Oman*, a small independent state whose capital is the seaport of MASKAT. The British have control of ADEN, which is one of their most important coaling stations.

FIG. 580.—A Persian girl in native costume.

Persia, like Arabia, is an elevated table-land, with large tracts of desert that are of little or no use to man.

Persia

The best agricultural district is near the Caspian Sea, where there is rainfall enough for crops. Elsewhere the climate is so arid that irrigation is necessary for farming. The chief farm products are tobacco, wheat, barley, cotton, and opium. Much silk also is produced, and roses are cultivated for the manufacture of the perfume, attar of roses.

Nearly two million Persians belong to nomadic tribes (Figs. 569 and 581) that roam about the desert, dwelling in tents, and herding goats, sheep, and other animals.

There are some valuable minerals, including the precious stone, turquoise. Precious pearls and pearl shells are found in the waters of the Persian Gulf.

Almost the only manufacturing is that done by hand (Fig. 582); and the Persians, like the Turks, do some very beautiful hand weaving, notably of shawls and rugs. Their carving and inlaid metal work and woodwork also are very artistic.

The government of Persia has long resembled that of Turkey, and has therefore been bad. The ruler, the *Shah*, has been an absolute monarch, controlling the lives and property of his subjects, who are mostly Mohammedans. Recently, however, there has been a popular uprising and a demand for better government. The Shah has promised a reform and has agreed to allow the people a voice in making their laws. TEHERAN is the capital and the largest city.

Afghanistan, "one of the waste places of the world," is a region of sand, bare rocks, and snow-capped mountains. Only in the valleys is the soil made to

Afghanistan

yield a harvest. Like other Asiatic countries so far studied, Afghanistan is badly governed. The ruler, the merciless *Amir*, keeps his authority by the terror he inspires among his subjects. Nestled among the lofty mountains is KABUL, the seat of government.

FIG. 581. — Persian nomads and their home.

4. RUSSIA IN ASIA

Its best-settled part

This vast country, extending from the Ural Mountains to the Pacific Ocean, is a part of the Russian Empire. The best settled section is in the south, in *Turkestan* and the dependencies of *Bokhara* and *Khiva*. Find these places on the map. Even this part is thinly inhabited, for the region is arid and desert, like the countries farther south.

The occupations, also, are similar to those of southwestern Asia. Herding is the principal industry on the arid steppes and deserts, sheep, horses, cattle, and camels being raised. In the river valleys and on the oases, corn, fruits, tobacco, cotton, hemp, and the silkworm are the principal products.

There is very little manufacturing beyond the making of rugs, shawls, and cloth, by hand. Many hand-made rugs from *Bokhara* and *Khiva* are sold in the United States.

FIG. 582. — Persian women making a rug by hand. These people are so backward that they have not learned to use modern machinery; but their hand work is very beautiful.

Its least-settled part

The northern portion, a land of frozen tundras, is the coldest region on any of the continents. The few people who live there resemble the Eskimos (Fig. 585). They keep herds of reindeer, which supply them with milk, meat, and hides, besides serving as draft animals (Fig. 584).

FIG. 583. — Russian carriages in a Siberian town.

The middle part of Siberia is a vast plain which, though little settled as yet, is the most promising section for the future. It has much good soil, and is suited to the production of grains. There is much forest here, and in the mountains valuable minerals are found, including gold, and graphite, or "black lead," from which pencils are made.

Its most promising part

One reason why this region has not been better settled is the fact that it has been difficult to reach. The rivers, which flow northward, have not been of much use, and until lately there have been no railroads. The Russian government has built a railroad all the way across Siberia, so that it is now possible to travel by rail from St. Petersburg to PORT ARTHUR on the Chinese coast. About how far is that?

There are several important cities in Asiatic Russia. The largest in the southwest is TASHKEND; and the city of BOKHARA is next in size. TIFLIS, between the Black and Caspian seas, is really in Asia, though the Russian government classes this region with its European provinces. It is about the size of Tashkend. In Siberia there are no large cities, though several along the railway, including IRKUTSK and VLADIVOSTOK, are now growing rapidly.

Leading cities

From Ratzel's "History of Mankind."

FIG. 584. — A camp in the tundra of northern Asia. The reindeer are used for drawing the sleighs and also as a source of milk and meat.

Russia has long used Siberia as a prison, and thousands of prisoners have been sent there;

many of them not because they have committed crime, but because they have said or done something that the Russian rulers did not like. Some, even, have been merely *suspected* of saying or doing something. Many have been seized by officers and thrown into prison without a moment's warning; then, without trial, they have been transported to Siberia to work in the mines. Men and women of the highest character have thus been torn from their families and hurried away so secretly that not even their friends knew what had become of them.

Use of Siberia as a prison

Fig. 585. — A Yakout woman from the cold tundra region of Siberia.

Such treatment shows the meaning of a despotic form of government. It also shows us very clearly how fortunate we are in living under such a government as our own.

5. The Chinese Empire

Some of the most important arts that man has ever learned have come from the Chinese. For instance, they made porcelain dishes long before the Europeans knew how, and on that account such dishes are still called *chinaware*, even though manufactured in the United States.

Former progress of the Chinese

They invented gunpowder, and our firecrackers for the Fourth of July formerly came from China. You have doubtless seen the Chinese letters on the outside of packages. They also discovered how to make silk and paper, and they invented the art of printing.

The Chinese were a highly developed people and a powerful nation long before the time of Christ. This is shown by the *Great Wall* that they built along their northern frontier in the year 212 B.C.

The Great Wall

This wall, which was built to keep out invaders, is twelve hundred miles long in a straight line, and more than fifteen hundred miles long with all of its windings. It leads up and down hill (Fig. 586), and even over a mountain peak. The wall is twenty-five feet wide and thirty feet high, and every few hundred feet there are strong watchtowers rising still higher. Although this wonderful structure, which required armies of men to build, is now more than two thousand years old, many parts of it are still perfect.

Fig. 586. — A view of a part of the great Chinese wall.

Their backwardness now, with reasons

This strange-looking, yellow race was once among the foremost nations of the earth; but now it is very much behind the Great Powers of Europe and the New World.

This is partly explained by the fact that the Chinese believe that whatever their ancestors did, they must do. This is called ancestor worship. Since their fathers had no railways, telegraphs, or telephones, they have wanted none themselves. Also, because of their dislike of new things, they have neither traveled much abroad, nor allowed foreigners to visit them. Indeed, they have looked down upon foreigners, or, as they call them, "foreign devils," who have so many strange customs.

A second cause for the backwardness of the Chinese has been their poor government. It has been an absolute monarchy, weak and corrupt, like that of Turkey.

Possible strength of China in the future

In spite of these facts, it is quite possible that China will yet rank as one of the Great Powers of the earth. Her enormous population, which is larger than that of all Europe, and five times that of the United States, gives one great advantage. Her area, which is greater than that of the United States, gives her a second advantage.

1. Area and population

The enormous population of China is not spread evenly throughout the whole country (Fig. 572). There are some sections where

FIG. 587. — A Chinese family engaged in ancestor worship.

very few people live, either because the climate is too cold or too arid, or because the country is too mountainous. Population is sparse, for instance, in Tibet, Turkestan, and Mongolia, which together make up half of the empire. There are some sections, as in the Desert of Gobi, where even grazing cannot be carried on.

On the other hand, vast hordes of Chinese live on the river flood plains and deltas of the south and east. This is, indeed, the most densely settled large area on the globe. These flood plains and deltas are very broad and fertile, especially in the lower portions of the Hoang-ho and Yangtse-kiang rivers.

While the flood plains and deltas make excellent farm land, they are in constant danger of floods, and are therefore not very safe places to live in. The Hoang-ho, for instance, may rise as much as forty feet in summer, and sometimes it overflows all the low country on either side. There have been many destructive floods, a single one of which destroyed a million lives. Because of the repeated destruction of life and property due to such floods, the Hoang-ho has been called "China's Sorrow."

A third advantage which China enjoys is her great variety of climate. Observe through what zones the Empire extends. How much farther south does it reach than our most southern state, Florida? How much farther north, than our most northern states? Naturally, then, the variety of climate is even greater than our own, and hence the agricultural products may be even more varied. As in our country, some parts are desert, some arid, and some have abundant rainfall.

2. Variety of climate

There are many kinds of soil, too. There are extensive plains, some of them broad river flood plains and deltas; some sections are plateaus; and there are also lofty mountain ranges.

3. The surface features

In so large a country, with so many differences in climate, soil, and surface features, there are certain to be many resources. Let us see what the principal ones are.

In northern and western China, the climate is arid, and there are some extensive deserts. Here the principal products are meat, wool, and hides. South and east of this there is rainfall enough for agriculture. Here the products of the temperate zone, such as wheat, can be raised. What other grains and agricultural products have you found in the northern half of the United States? All these can be raised in this part of China.

4. Resources (1) *Agricultural products*

FIG. 588. — One of the Chinese rivers on which commerce is carried by the use of sail and row boats.

Central China, just south of this section, has a warm, temperate climate. Here cotton, rice, millet, oranges, and silk are produced. Rice is one of the chief articles of food for the Chinese, and China produces more raw silk than any other country in the world.

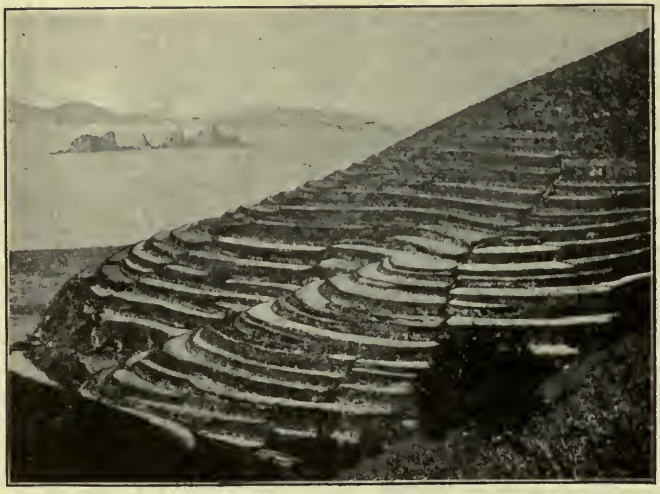


FIG. 589. — Chinese farm scenes. These terraces have been built by the Chinese, so that they can cultivate even the steep hill slopes.

The extreme southern part of the Empire extends into the tropical zone. Here we find tropical fruits, such as grow in Central America and the West Indies. Name several of them.

Thus China produces all the crops that the United States does, and more. Name some of their products that we do not raise.

The farming methods are very crude, but the Chinese are so skillful and industrious, that they till every bit of land possible (Fig. 589). For example, instead of leading water for irrigation only to land of gentle slope, as in the United States, they often take it to the very hilltops. It is first raised from the river by means of wheels, turned either by men or by buffaloes, and then pumped upward from one terrace to the next, until the whole hillside is watered. Such methods could not be used unless labor were very cheap. A Chinese laborer receives only about ten cents a day as wages.

There is valuable fishing along the coast. The Chinese make much use of fish as an article of food, catching them from the rivers as well as from the sea. They even train birds to catch fish for them. **(2) *Fishing***

The Chinese have never been noted as miners, and therefore little is known about the mineral wealth of the country. Still it is certain that there are vast deposits of coal of the very best quality, some of it hard coal, like that of eastern Pennsylvania. There are also extensive deposits of iron, gold, silver, and other valuable minerals. **(3) *Minerals***

The Chinese are an artistic people, and they make very beautiful chinaware and silk fabrics; but they still do most of the work by hand, as has been the custom for thousands of years. **5. Manufacturing**

FIG. 590. — A Chinese lady being carried by two men — a very common way of traveling in China.

They carry on other kinds of manufacturing, also, mainly by hand. There is, for instance, much use made of the bamboo, whose wood is used in building houses (Fig. 591), as well as in making nearly all articles of furniture. The bamboo is also woven into mats, baskets, and hats; and from its pulp paper is made; the seeds also are ground up for food, while the tender roots and stalks are eaten.

There are so many industrious, intelligent people in China, and there are such vast resources, that when China once adopts modern methods of manufacturing she will doubtless take a leading place among the nations of the world. It may happen, even, that China will be able to make and sell goods more cheaply than can be done in Europe or America.

The natural means of transportation in China also are excellent. There are many good harbors, especially at the mouths of the rivers; and these rivers are open to navigation far into the interior (Fig. 588). Even now, the easiest way of getting into the interior of China is by boat, especially on the Yangtse-kiang and Hoang-ho rivers. Trace these rivers.

The Chinese have built a number of canals (Fig. 591), and these have been used for centuries. Find the Grand Canal on the map, and tell what cities it connects. It was built twelve hundred years ago. Railways and electric cars, being new inventions, have been much disliked by the people. For that reason there are, even now, few of these in this vast Empire.

FIG. 591. — A Chinese village, with bamboo houses, on the banks of a canal.

FIG. 592. — A Chinese passenger wheelbarrow, on which people are carried long distances.

6. Means of transportation

The Chinese methods of transportation have been, and are still, very crude. It has been the custom for men to take the place of horses to a large extent, carrying goods on their backs, and drawing both people and freight in vehicles of various kinds (Fig. 590).

One of the principal vehicles is the wheelbarrow (Fig. 592), which can be used even where the roads are very narrow. There are

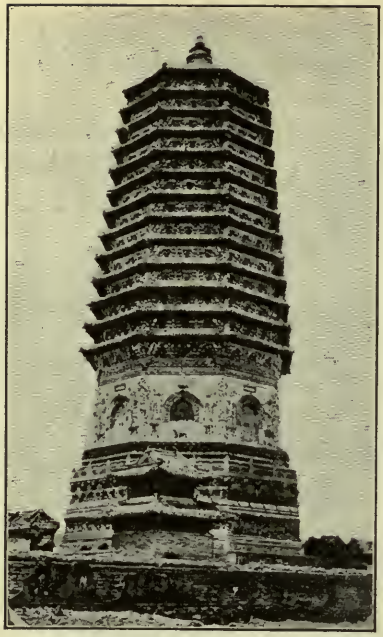


FIG. 593. — A Chinese pagoda, or temple, where the people worship.

more than two thousand passenger wheelbarrows in Shanghai alone. It is said that passengers sometimes travel from Shanghai to Peking, a distance of six hundred miles, in wheelbarrows. Labor is so cheap that it costs about twenty cents a day, or at the rate of about half a cent a mile, for each passenger, two traveling in a single wheelbarrow. This is about one fourth as expensive as the passenger rate on some of our railways. The passengers in the wheelbarrow, however, do not go as far in a whole day as we go on our trains in two hours!

7. Recent advances

Of late, the Chinese have been rapidly changing their customs. They are now sending hundreds of their able young men to Europe and to America to learn about our arts and industries. They are inviting foreigners into their country, are building railroads, and improving their laws. They have even begun to make important changes in their form of government, so that the people may have a greater share in it. Thus the Chinese are awakening at last, and it seems likely that they will make wonderful progress in the future.

Chief cities

You have already learned that a large portion of the Chinese live along the coast and the lower courses of the rivers. There are so many people here that scores of thousands can find no room on the land, but live in houseboats on the water. Many others dig caves in the hillsides, and live in them.

1. Canton and Hongkong

In this section there are many large cities. One of the largest is CANTON, which, situated on a densely populated delta, is a port of

FIG. 594. — A caravan of camels, outside the walls of Peking.

outlet for southern China. Canton is noted especially for its silk.

Hongkong, an island which commands the approach to Canton, belongs to the British. Many of the products of China are sent from this port to Europe and America.

2. Cities on the Yangtse-kiang River

Hankau and Wuchang, on the Yangtse-kiang River, are important river ports for tea. Here, as in the case of most Chinese cities, the number of inhabitants is uncertain. For example, by some estimates, Hankau has a population of more than a million; by others, only a half million.

Shanghai also is a large city. It is a *treaty port;* that is, one where foreigners are allowed by treaty to carry on trade. This is not permitted in all Chinese cities.

3. Peking and Tientsin

Peking, the capital of China, has been the capital of a kingdom for three thousand years, and the capital of the Chinese Empire for over eight centuries. This city, like others in China, is surrounded by a high wall (Fig. 594) with gates that are closed at night. Many European cities in olden times were so protected. One portion of the city is reserved for the gardens and palaces of the emperor. This part is known as the "Forbidden City," because the Chinese government formerly refused to allow foreigners to enter it.

Tientsin, the port nearest Peking, is an important seaport. It is situated at the northern end of the Grand Canal.

6. The Japanese Empire

Area and population

Japan is only a little more than one tenth as large as China, and has only a little more than one tenth as many inhabitants. It is not much larger than the British Isles in area and population.

On the map (Fig. 568) find the two largest islands, Nippon and Yezo.

Find Formosa, the most southern island of the Empire. The Kurile Islands and the southern half of Sakhalin Island also are included in the Empire. Locate these islands. Estimate the

Fig. 595. — A Japanese coolie carrying water.

greatest length of the Empire from north to south.

Japan is, as you see, an island empire like the British Isles. No part of the country is far from the sea and therefore the Japanese, like the British, have a favorable position for commerce.

The Japanese, like their neighbors, the Chinese, belong to the yellow race. Like them, also, they have a very ancient civilization. For a long time the Japanese, like the Chinese, wanted nothing to do with foreigners. In 1853, however, an American naval officer, Commodore Perry, entered the harbor of Yokohama with several war ships, and persuaded the Japanese to allow us to trade with them.

Advances since 1853

FIG. 596. — Mutsuhito, Emperor, or Mikado, of Japan.

Since that time the Japanese have made wonderful advances. They have built railways and have established lines of steamships to many parts of the world. They have introduced the telephone and the telegraph, have established many newspapers, and many schools of all grades. At the same time they have made such progress in manufacturing that they are now one of the leading manufacturing nations of the world.

Only a few years ago Japan engaged in a war with Russia to prevent that Great Power from seizing Korea. The Japanese won the victory and took control of Korea. A few years before that they had a war with China, in which they easily won.

Japan is now far in advance of all other countries in Asia. She ranks as one of the Great Powers of the world, the only one in Asia, and is sometimes called the England of the Orient.

Probably no nation has ever advanced more rapidly than has Japan during the last fifty years. Some of the reasons for this astonishing growth are as follows: Perhaps the most important of all reasons has been the eagerness of the Japanese to learn. Soon after Commodore Perry's visit, they invited foreigners to come as teachers, and sent thousands of their young men abroad, to study in the United States and in Europe.

Reasons for this wonderful advance

1. Eagerness to learn

A second reason for the progress of the Japanese is their good government. Before 1853 the real power was in the hands of the noblemen, who had large numbers of peasants to work for them and to fight in their wars. This was somewhat like the condition in Europe in the Middle Ages, which was called the *feudal system*.

2. A good government

After Commodore Perry's visit a new government was established in which

the people had a voice. There is an emperor, called the *Mikado* (Fig. 596), and a legislature with two houses, one elected by the people. The government is, therefore, a limited monarchy.

3. The natural resources of the country

The valuable resources of the country are a third reason for the advance of Japan. The climate is everywhere moist enough for agriculture, and the temperature is also favorable. In what zone does most of Japan lie? In what zone is the rest of the Empire? Although a large part of the surface is mountainous (Fig. 571), there is yet much excellent soil. The people have learned to cultivate it very skillfully, too, allowing no land to lie idle that can possibly be used for crops. About one sixth of the surface of the empire is cultivated.

The long distance through which the islands extend from north to south, makes it possible to raise many different kinds of crops. Measure to see how far it is from Yezo, on the north, to Formosa, on the south. What is the latitude of the northern and of the southern boundaries? The crops in the north are the products of the cool temperate zone; those in the south, and especially in Formosa, are such as are common to the tropical zone. Japan, like China, produces much tea, silk (Fig. 598), and rice (Fig. 597); and as among other Mongolians, rice is one of the chief articles of food. Among other farm products are wheat, vegetables, fruits, and sugar cane.

There are also valuable forest trees, including the camphor, the laurel, and the lacquer trees, which grow in the forests that clothe the mountain sides.

Another resource of great value is the fish in the waters surrounding the Empire. Fully two and a half million Japanese are engaged in fishing, and fish form one of the important foods of this island people.

This small country has important mineral resources, including gold, copper, iron, coal, and petroleum. There is also excellent water power for use in manufacturing.

4. Cheap and skillful labor

A fourth reason for the wonderful progress of Japan is that labor is very cheap there, as in China; and that the Japanese are very skillful workmen. In the United States one often sees especially beautiful

FIG. 597. — Planting rice in the flooded fields in Japan.

FIG. 598. — Japanese women gathering the cocoons spun by the silkworm.

fans, parasols, napkins, dolls, and screens that were made in Japan. Whatever the Japanese make, they try to make beautiful.

A fifth reason for the advance of the Japanese is the growth of manufacturing. They have learned methods of manufacturing from Europeans and Americans. Therefore, with their skill and industry, their cheap labor, and their abundance of raw materials, fuels, and water power, this industry has grown greatly. In silk manufacturing, especially, they have taken high rank. They are also very skillful in making pottery; and they manufacture much cotton and woolen cloth, as well as iron goods, including machinery and ships.

5. The growth of manufacturing

A final reason for the rapid advance of Japan is its favorable situation for ocean commerce. In this respect it resembles the British Isles. The coast is very long, and there are many good harbors.

6. Advantages for commerce

The islands are so narrow, and so mountainous, that there can be no large navigable rivers. But these are not greatly needed, for almost all parts of the Empire are near the sea and can therefore be reached by ocean vessels. Short railroad lines also extend into the interior and connect the seaports.

Japan suffers some serious drawbacks, however. For example, many of the islands are small, and all of them are mountainous. They are the crests of a great mountain range rising from the bottom of the sea, and some of the peaks are volcanoes (Fig. 571). The mountains are still rising, too, and as they rise, the rocks now and then break apart and change their positions, causing earthquakes. Sometimes these shocks are so powerful that houses are thrown down, causing great destruction of life and property. Japan has been visited by many terrible earthquakes (Fig. 599).

One disadvantage

The great number of earthquakes has caused the Japanese to build low houses of light materials, such as bamboo, which withstand the shaking. Even if they are thrown down, they are not so dangerous to life as those made of stone or other heavy materials.

TOKYO, a city about as large as Chicago, is the capital of Japan. Be-

sides being the home of the Mikado, and therefore having many government buildings, it is a busy manufacturing center. YOKOHAMA, at the entrance of Tokyo Bay, is the leading seaport of Japan.

Principal cities

The second city in size is OSAKA, noted for its cotton manufactures, and having a population of about a million. Other important cities are KYOTO, the former capital, and the center of the tea district, and NAGOYA, a center for porcelain manufacturing.

FIG. 599. — This building was torn in pieces by the shaking of the earth during one of the destructive Japanese earthquakes.

Japan gained control of Korea in 1905, as a result of the war with Russia. This mountainous peninsula has a temperate climate, suited to the production of such crops as grains in the north, and rice, tobacco, and cotton in the south.

Korea

In many respects the Koreans resemble the Chinese; in fact, Korea was for a long time a dependency of China. While there are great natural resources, including both coal and iron, little use has been made of them. Like the Chinese, the Koreans formerly forbade foreigners to enter their country. This is indicated by the name, "Hermit Kingdom," long applied to Korea. But since the Japanese have obtained control of Korea, there has been much progress. The capital and the largest city is SEOUL.

FIG. 600. — A Japanese laborer drawing a two-wheeled vehicle called a jinrikisha. A common way of going about the cities.

7. INDO-CHINA AND THE MALAY PENINSULA

This peninsula is crossed from north to south by several mountain chains, with long narrow valleys be-

Surface and principal divisions

tween. The flood plains and deltas of the rivers in these valleys are very fertile and are densely populated. Name the largest two of these rivers.

In addition to Burma, which is a part of the Indian Empire, there are three divisions of the peninsula: (1) *Siam*, (2) *French Indo-China*, and (3) the British Colonies of *Straits Settlements and Malay States*. They are all tropical countries.

Fig. 601. — A family of Indian Brahmans of high caste.

Most of the inhabitants of Siam live along the rivers and the irrigation canals. They are engaged chiefly in the cultivation of rice; but millet also, which is raised in the drier places, is much used for food. Among the mineral products are rubies, sapphires, gold, and tin. The forests yield valuable tropical woods.

Siam

Bangkok is the capital and the largest city. Here are the magnificent palaces of the king, and many Buddhist temples, decorated with gold and silver, and even with jewels. Next to the king, the white elephant is held in highest reverence, and Siam is often called "the Land of the White Elephant."

French Indo-China resembles Siam in both climate and people. Its forest-covered hills yield valuable teak and iron wood, and in its valleys are extensive fields of rice and millet. Silk, cotton, tea, and spices are other products, and there are also extensive coal beds. Some coal is exported.

French Indo-China

The Straits Settlements and Malay States are the two names given to the British possessions on the southern end of the Malay Peninsula and some small islands near by. In that hot, damp country, so near the equator, such tropical products as rice, cocoanuts, rubber, and spices are obtained. There are extensive deposits of tin in this region, which supplies more than half the tin used in the world. The only city of importance is Singapore.

Straits Settlements and Malay States

8. The Indian Empire

India, the central one of the three peninsulas on the southern side of Asia, is about half as large as the United States, but it contains more than three times as many people. There are, in fact, more people in India than in the whole of North and South America. In some parts there are as many as five hundred persons to the square mile.

Area and population

The Indian Empire includes not only the entire peninsula of India, but the desert country of *Baluchistan* on the west, and fertile *Burma* on the east. The two little countries of *Nepal* and *Bhutan*, among the Himalaya Mountains on the north, are to some extent under the protection of the Indian Empire.

Divisions of the empire

Most of the Indian peninsula is a plateau, one thousand to two thousand feet high. But on the northern border of the empire are lofty mountains, the highest being the Himalayas. In these mountains are many peaks that rise over four miles above sea level, and even the mountain passes are higher than Mont Blanc in the Alps. Between these lofty mountains and the Indian plateau is a broad lowland through which three great rivers flow,—the Ganges, the Indus, and the Brahmaputra. Trace each of these rivers.

Surface features

Fig. 602. — An Indian woman of low caste.

The coast of India is very regular, and there are, therefore, few good harbors.

Having a tropical climate, India is a very hot country; and in some parts the climate is also very damp. This is true, for instance, in the southern part, and also in the north, on the slopes of the Himalaya Mountains. Here, just west of Burma, is the region which has the heaviest rainfall in the world. Much of the empire, however, suffers for want of rain. In northwestern India and in Baluchistan, for instance, there are extensive deserts; and much of the interior of the peninsula is arid. Thus, in many parts of India irrigation is necessary.

Climate

The natives of India are classed as a branch of the white race, though most of them are much darker than Europeans. Before the British took control of India the peninsula was divided into many states ruled by native princes. Most of the states, too, have languages of their own.

The people and government

The native states still exist, and the native princes still hold their places; but they are all under the general control of the British. The present form of government was established in 1858, and India was declared a part of the British empire in 1877. Since that time the king of England has also been called the Emperor of India. An officer, called the *viceroy*, is sent to India from Eng-

FIG. 603. — The great statue of Buddha.

land to take general charge; but the natives have a share in their own government, and many of the government officers are native Hindus.

Religion

There are a number of religions in India, including the Christian, the Mohammedan and the Buddhist; but the religion of about three fourths of the people is Brahmanism. One of the teachings of their religion is the belief in *caste*, — that is, that a person born in one station in life must stay there and cannot hope to rise into a higher station. That is very different from our belief that all men are born free and equal.

The people of India have many religious superstitions. For example, the Ganges is considered a sacred river, and bathing in its waters is supposed to wash away disease. Since the waters are also used for drinking, this custom is no doubt responsible for much spread of disease. The devout Hindu makes at least one pilgrimage to the holy river as a means of gaining divine favor and forgiveness.

Why these possessions are valuable

India, together with the peninsula and islands east of it, is the part of the world that Columbus was seeking when he discovered America. He undertook his voyage in order to find a short and easy route for bringing to Europe the silks, dyewoods, spices, perfumes, ivory, and precious stones that had long been reaching Europe from the Indies. These same valuable products are still brought from this region; but other products, as well, now come from here.

There are extensive forests on the mountain slopes, from which much lumber is obtained. One valuable tree is

FIG. 604. — Natives preparing rattan in the tropical part of southern India.

the teak, whose strong, durable wood is useful in building ships. In the hotter portions are plants valuable for medicines; also spices, such as pepper and cinnamon. The bamboo is used in hundreds of ways in making implements and in building houses; and the palms supply juices for drink, cocoanuts (Fig. 609) for food and for oil, and fiber for ropes and mats.

1. Because of valuable forest products

Eastern and southern India, where the winds blow from the ocean, have abundant rain. Because of the dampness and the tropical heat, there are extensive forests here, forming a dense tangle, or *jungle*. In this jungle the tiger lives; also the elephant, and other large and fierce animals (Fig. 573). There are great numbers of poisonous serpents, too, and thousands of people die every year from their bites. The English government has done much to make life safer and more agreeable in this section.

Fig. 605. — The tiger, one the wild animals of southern Asia.

From the very earliest times the people of India have been engaged in farming, and at present fully three fifths of them follow that occupation. Millet and rice are the staple foods of the natives; but after the vast number of inhabitants are fed, there is little left for export.

2. Because of agricultural products

Wheat, on the other hand, is raised for export, and India is an important granary for Great Britain. Much cotton also is produced, and a part of this likewise goes to Great Britain. Other agricultural products are sugar cane, tobacco, opium, indigo, of value as a dye, and jute which supplies a coarse, strong fiber. Much tea is raised on the hills of the very rainy region at the base of the Himalayas, south of Bhutan (Fig. 606).

Tea requires a hot climate, plenty of rain, and slope enough to prevent the water from standing around the roots of the plant. The tea plant, which is from two to four feet high, has bright green leaves similar to those of a rosebush. The leaves are picked several times a year, in many cases by boys and girls. After being picked, the leaves are dried in order to remove all moisture before packing.

India is not a great mining country, yet there are some valuable mineral deposits. Among these are salt, petroleum, iron, and coal. The latter is of special value because of its usefulness in manufacturing. Naturally coal is not much needed as a fuel in the homes. Why?

3. Because of mineral products

The native inhabitants of India, like the Chinese, have long been highly civilized and have long been noted for their beautiful hand work, in wood, metal, and cloth. They have many fine buildings that are centuries old. Even before the time of the Roman Empire, and of the Republic of Athens, the people of India were highly civilized. But, like the Chinese, for a long time they did not cultivate the arts and sciences as Europe has done.

Benefits of English rule

FIG. 606. — Natives picking tea in a tea plantation in India.

In many ways, therefore, it has been to their advantage to come under the control of the British.

For instance, the British have caused many excellent roads and railways to be built in India. They have also established a number of manufacturing industries, especially cotton. Another important work has been the improvement of the system of irrigation; for much of western and central India is so arid that irrigation is necessary. Before the British took possession, famines and plagues were common. But the people are better fed now, and with the building of roads and railways, food can be carried to places where the crops are an entire failure.

Reasons why the British can control India

In spite of these benefits, one wonders how so large a country, with so vast a population, can be kept under control by the English. India is about twenty times as large as Great Britain, and has about eight times as many inhabitants.

Many of the people of India are, in truth, dissatisfied with the English rule, and wish for independence; but they have not been able to obtain it, for India is very weak. The main cause for its

weakness is the *caste* system, already mentioned. Men belonging to one caste will have almost nothing to do with those of a lower caste; they will not even eat at the same table with them. There are also different races, with varying customs, among the Indian people. These differences among them have made it impossible for the natives to expel the English, as they certainly could if they were united.

FIG. 607. — Native buffalo used for drawing wagons in India.

So many Hindus are engaged in farming that only about five per cent of the population dwell in large towns. Yet, there are eighty-three cities, each with a population of more than fifty thousand, while one, Calcutta, has more than a million inhabitants, and two others, Bombay and Madras, more than a half million each.

Large cities 1. Their number

CALCUTTA, a seaport on the Ganges delta, is the natural outlet of the fertile Ganges Valley. Since the city is situated near coal fields, there is some manufacturing; but Calcutta is chiefly important as a commercial center and as the residence of the "viceroy," or English governor.

2. Cities on the Ganges River

Farther up the Ganges are two smaller cities, LUCKNOW and BENARES. The latter, the "holy city of the Hindus," is on that part of the Ganges which is thought to be most holy. At this point temples (Fig. 608) line the banks of the river for miles, and a steady stream of pilgrims pours into and out of the city.

The Indus has no such large cities as those on the Ganges, partly because the country is desert, and partly because the river is too shallow for navigation.

FIG. 608. — Temples on the banks of the Ganges at Benares.

BOMBAY, next in size to Calcutta, and the nearest port to England, is a great business center. It is, moreover, the only Indian city with a good natural harbor. MADRAS, the third largest city, is situated at a point where there is only an open coast protected by a breakwater.

3. Bombay and Madras

RANGOON, the seaport of Burma, is important for its ex-

4. Rangoon and Mandalay

port of rice; but MANDALAY, farther up the Irawadi River, is the largest city.

Ceylon

Ceylon, with its fertile soil, abundant rainfall, and warm climate, is like a beautiful tropical garden. It was believed by the Arabs to be the Garden of Eden. Among the products are cocoanuts, rice, fruit, coffee, and tea. The island is the third most important tea-producing section in the world. Other products are sapphires, rubies, pearls, and mother of pearl.

1. Give some idea of the area and population of Asia. 2. Why might we expect that Asia would be well known? 3. What kind of land is found in the southwest? How has this kept us from knowing more about the continent?

FIG. 609. — An elephant drawing a load of cocoanuts in Ceylon.

General facts about Asia

1. Questions

4. What conditions in the north have made it hard to find out much about Asia? 5. Why has the central part become little known to us? 6. How has the character of the people prevented us from knowing more about them?

2. Suggestions

1. Have you ever seen any Asiatic people? From what countries did they come? 2. Examine pictures of buildings in Asia (in this book, or elsewhere) and note how they differ from our own. 3. Write a paper telling in what respects an Asiatic city differs from one of our own. 4. By what water routes could you go from New York to Tientsin? Would it be nearer to go by rail as far as San Francisco or Seattle? 5. By what three all-water routes could you go from New York to Bombay? Which is the shortest? 6. One can go by rail from Lisbon in Portugal to Port Arthur on the Pacific. How far is that?

The Turkish, or Ottoman Empire

1. Questions

1. Why is this empire of special interest to us? 2. Describe its surface and climate. 3. Give some facts about its industries, products, and chief cities. 4. Tell about the surface and climate of the Holy Land. 5. What important events happened there? 6. What do you know about the former products and commerce of Palestine? 7. What are the present methods of travel? 8. State some facts about the ancient history of Mesopotamia. 9. What importance has it at present?

2. Suggestions

1. What stories in the Bible have you read, that tell about places mentioned in this geography? 2. Point out on the map (Fig. 576) some of the places often mentioned in the New Testament, and describe some of the events that occurred there. 3. What is meant by the date 1909? 4. What is the meaning of B.C. and A.D. after a date (for example, 800 B.C. or 1900 A.D.)? 5. Find out some facts about the Crusades. 6. Make a sand or clay map of the Holy Land.

Arabia, Persia, and Afghanistan

1. Questions

1. Describe the surface features and climate of Arabia. 2. How is Mecca of importance? 3. Tell about the population and products of Arabia. 4. Its government. 5. Describe the surface features and climate of Persia. 6. Name its agricultural products. 7. Tell about its mining and manufacturing. 8. Its government

and chief city. 9. State facts about Afghanistan.

2. Suggestions

1. Find out how pearls are obtained. 2. What is mother of pearl? 3. Find out more about the life and teaching of Mohammed. 4. Examine a Turkish or Persian rug.

Siberia

1. Questions

1. State some facts about the best-settled part of Siberia. 2. About its least-settled part. 3. About its most promising part. 4. Name and locate the chief cities. 5. Tell about the use of Siberia as a prison.

2. Suggestions

1. Of what advantage will the Siberian railway be to Russia? 2. How does that railway compare in length with those crossing the United States? 3. What object do you see in having the eastern terminus, Port Arthur, so far south?

Chinese Empire

1. Questions

1. Tell about the former progress of the Chinese. 2. Describe the Great Wall. 3. Why are the Chinese so backward now? 4. What about the area and population of China? 5. Where do most of the people live? 6. Tell about the destructive floods. 7. What kinds of climate are there? 8. Describe the surface features. 9. What are the chief agricultural products? 10. How is farming carried on? 11. Tell about lumber and fish. 12. What about mining? 13. What is the condition of manufacturing? 14. Tell what you can about means of transportation. 15. Describe the recent advances of the Chinese. 16. Name and locate the principal cities.

2. Suggestions

1. How can you distinguish a Chinaman from other men? 2. How might railways in China help greatly to prevent the awful famines that they sometimes have there? 3. Why should the Great Wall have less value now than formerly? 4. What reasons can you see for or against the free admission of Chinese to the United States? 5. Find out about some of the events connected with the Boxer trouble in China in 1900.

Japan

1. Questions

1. Compare Japan with China in area and population. 2. Name and locate the parts of the empire. 3. Compare Japan with the British Isles. 4. What advances have been made by Japan since 1853? 5. Give several reasons for such advances. 6. Describe the government of Japan. 7. Name the chief agricultural products. 8. Name some of the forest products. 9. What can you tell about the fisheries? 10. Name the principal minerals. 11. What about manufacturing? 12. Advantages for commerce? 13. Tell about the volcanoes and earthquakes. 14. Name and locate the principal cities.

2. Suggestions

1. Make a collection of Japanese articles, such as paper napkins, fans, etc. 2. Examine them to see in what respects they are artistic or beautiful. 3. Collect pictures of Japanese houses and people. 4. Find out something about the war between Russia and Japan.

Indo-China and the Malay Peninsula

1. Questions

1. Describe the surface features of this region. 2. Name the principal divisions. 3. State the principal facts about Siam. 4. About French-Indo China. 5. The Straits Settlements and Malay States.

2. Suggestions

1. About how near is Singapore to the equator? 2. Bound Siam. 3. Through what waters would one pass in going from Bangkok to Constantinople? 4. From Bangkok to Tientsin?

The Indian Empire

1. Questions

1. State some facts about the area and population of this region. 2. Name the chief divisions of the Indian Empire. 3. Describe the surface features. 4. The climate. 5. What can you say about the people and government? 6. Mention some ways in which this region is valuable to the British. 7. What are the chief forest products? 8. The agricultural products? 9. The mineral products? 10. Mention some benefits that the native inhabitants have received from British rule. 11. Give a special reason why the British are able to control India. 12. Name and locate the principal rivers and cities. 13. What can you tell about Ceylon?

2. Suggestions

1. Find out about foreign missions to India, or to other parts of Asia. 2. How far was Columbus from India when he discovered America? 3. What route should he have taken if he had continued his voyage to India? 4. On a globe find which is the shortest water route from Bombay to London. 5. Read Kipling's "Jungle Book."

General Review

1. Name the principal countries of Asia, and locate each. 2. What routes might you take in going to Peking? 3. What great cities of Europe and North America are in nearly the same latitude as Peking? 4. Name the principal rivers in Asia, and describe their courses. 5. Name and locate the chief cities of Asia. 6. Draw an outline map of Asia, putting in the boundaries of the principal countries. 7. Put in, also, the principal mountains, rivers, and cities. 8. Make a sand map of the continent, showing its shape and its main slopes.

Comparisons with North America

1. How do North America and Asia differ in form? In regularity of coast line? In direction of mountain ranges? In extent of the deserts? 2. Does the Canadian Pacific Railway lie to the north or the south of the Siberian railway? Which is the longer? 3. Is San Francisco north or south of Peking? 4. Name the three peninsulas of southern Asia; of southern Europe. Which of the six is nearest the latitude of Florida? 5. Name the large rivers of Asia and of Canada that flow into the Arctic Ocean. On a globe estimate the shortest distance between the mouths of the Mackenzie and Lena rivers. 6. How do the great rivers of China compare in length with the Mississippi? With the Volga? 7. How do the interior lakes and seas of Asia compare in value for commerce with our Great Lakes? Why? 8. With what salt lake in North America may the Aral Sea be compared? 9. In what portions of North America and Asia is rice cultivated? 10. Answer the same question for cotton. 11. What important crops in Asia are not extensively raised in the United States? 12. What is the chief kind of government in each of the two continents?

SECTION II. AFRICA

Map study

1. What continent does Africa most resemble in shape? 2. In what parts are the chief mountain ranges (Fig. 611)? 3. Name and trace the largest three rivers. 4. About how much of Africa lies in the torrid zone? Is this an advantage or a disadvantage? Why? 5. How does its coast line compare with that of Europe in regularity? 6. What influence must that have upon the harbors? 7. What large island lies east of southern Africa? 8. What three groups of small islands lie west of northern Africa? 9. Find the desert country, both north and south of the equator.

1. General Facts about Africa

Surface features

Africa has the shape of a triangle, broad in the north, resembling both North America and South America in this respect. It has also a very regular coast, with few capes, peninsulas, bays, and harbors. Name the cape that extends farthest north; farthest south; farthest east; farthest west. What waters border the continent on the north; on the east; on the west?

The continent is mainly a plateau, but there is a mountain rim around part of it. The loftiest mountains are in the central part of the eastern side. Locate three mountain peaks in this section (Fig. 612). One of these, Mt. Ruwenzori, is the highest peak on the continent. Locate also the Atlas Mountains; some of the peaks in this range are 14,000 feet high.

Climate

A large part of Africa is a desert. The most extensive desert is in the north, stretching from the Atlantic Ocean to the Red Sea, and northward to the shores of the Mediterranean. What is the name of this vast desert region? What names applied to parts of it do you find on the map (Fig. 612)? The dry country extends


AFRICA
Scale of Miles
0 500 1000
Cities with over 300,000 Cairo
Cities with 100,000 to 200,000 Tunis
Cities with 25,000 to 100,000 Tripoli
Smaller Places Suez
Capitals with less than 25,000 LOME
Capitals
Other places
British Territory
French "
German "
WILLIAMS ENGRAVING CO., N.Y.
Longitude West from Greenwich
Longitude East from Greenwich
EQUATOR
TROPIC OF CANCER
TROPIC OF CAPRICORN
ATLANTIC OCEAN
INDIAN OCEAN
ARABIAN SEA
ARABIA
PERSIA
INDIA
Bombay
MEDITERRANEAN SEA
RED SEA
SAHARA
FRENCH TERRITORY
FRENCH WEST AFRICA
SOUTHERN ALGERIA
ALGERIA
MOROCCO
TRIPOLI
EGYPT
Cairo
Alexandria
ANGLO-EGYPTIAN SUDAN
ABYSSINIA
ITALIAN SOMALILAND
BRITISH EAST AFRICA
GERMAN EAST AFRICA
BELGIAN CONGO
KAMERUN
ANGOLA
GERMAN SOUTHWEST AFRICA
RHODESIA
UNION OF SOUTH AFRICA
MADAGASCAR
LIBERIA
SIERRA LEONE
Cape Town
Cape of Good Hope
Johannesburg
Kimberley
PIETERMARITZBURG
MOGADISHO
MOMBASA
Zanzibar (Br. Protectorate)
DAR-ES-SALAAM
Tananarivo
ST. HELENA (Br.)
ASCENSION I. (Br.)
CAPE VERDE ISLANDS (Port.)
CANARY IS. (Sp.)
MADEIRA IS. (Port.)
SEYCHELLES IS. (Br.)
MAURITIUS I. (Br.)
REUNION I. (Fr.)
RODRIGUEZ I. (Br.)

FIG. 610.


PHYSICAL MAP OF
AFRICA
Scale of Miles
0 200 400 600 800 1000 1200 1400 1600
Over 6,500 ft.
From 1,650 to 6,500 ft.
From 650 to 1,650 ft.
From 0 to 650 ft.
Sea Level
From 0 to 6,500 ft.
From 6500 to 13,000 ft.
Below 13,000 ft.
SPAIN
MEDITERRANEAN SEA
AZORES IS.
MADEIRA IS.
CANARY IS.
CAPE VERDE IS.
BISSAGOS IS.
Strait of Gibraltar
ATLAS MTS.
PLATEAUS OF ALGERIA
OASIS OF WARGLA
Algerian Sahara
C. Bon
G. of Gabes
Gulf of Sidra
BARKA PLATEAU
Oases of Fezzan
LIBYAN DESERT
Oases of Kufra
TROPIC OF CANCER
SAHARA DESERT
Cape Blanco
Cape Verde
TIMMO MTS.
HIGHLANDS OF TIBESTI
TARSO MTS.
PLATEAU
Oasis of Kawar
Lake Chad
Senegal R.
Niger R.
Benue R.
Shari R.
Nile River
Nubian Desert
RED SEA
Athara R.
Blue Nile
White Nile
ABYSSINIAN PLATEAU
Strait of Bab-el-Mandeb
GULF OF ADEN
SOKOTRA I.
Cape Guardaful
PERSIAN GULF
ASIA
Indus R.
ARABIAN SEA
Bight of Benin
Kamerun Mts.
C. Palmas
FERNANDO PO I.
GULF OF GUINEA
PRINCE'S I.
ST. THOMAS I.
ANNOBON I.
Cape Lopez
EQUATOR
Ubangi R.
Makua R.
Albert Nyanza
Mt. Ruwenzori
L. Rudolf
Juba R.
Mt. Kenia
Albert Edward Nyanza
Victoria Nyanza
Mt. Kilimanjaro
L. Leopold II
Congo River
Stanley Pool
Kuango R.
Kassai R.
Lake Tanganyika
PEMBA I.
ZANZIBAR I.
L. Moero
Bangweolo
Lake Nyassa
AFRICAN HIGHLANDS
SEYCHELLES IS.
AMIRANTE IS.
FARQUHAR IS.
Cape Amber
MOZAMBIQUE CHANNEL
MADAGASCAR
STE. MARIE I.
MAURITIUS I.
REUNION I.
TROPIC OF CAPRICORN
Victoria Falls
Zambezi River
MATOPPO HILLS
Kubango R.
Kalahari Desert
Limpopo R.
C. Corrientes
Cape Ste. Marie
Delagoa Bay
Vaal R.
Orange R.
DRAKENSBERG
Cape of Good Hope
Cape Agulhas
INDIAN OCEAN
ATLANTIC OCEAN
ASCENSION I.
ST. HELENA I.
S. AM.
Longitude West from Greenwich
Longitude East from Greenwich
WILLIAMS ENGRAVING CO., N.Y.

FIG. 612.

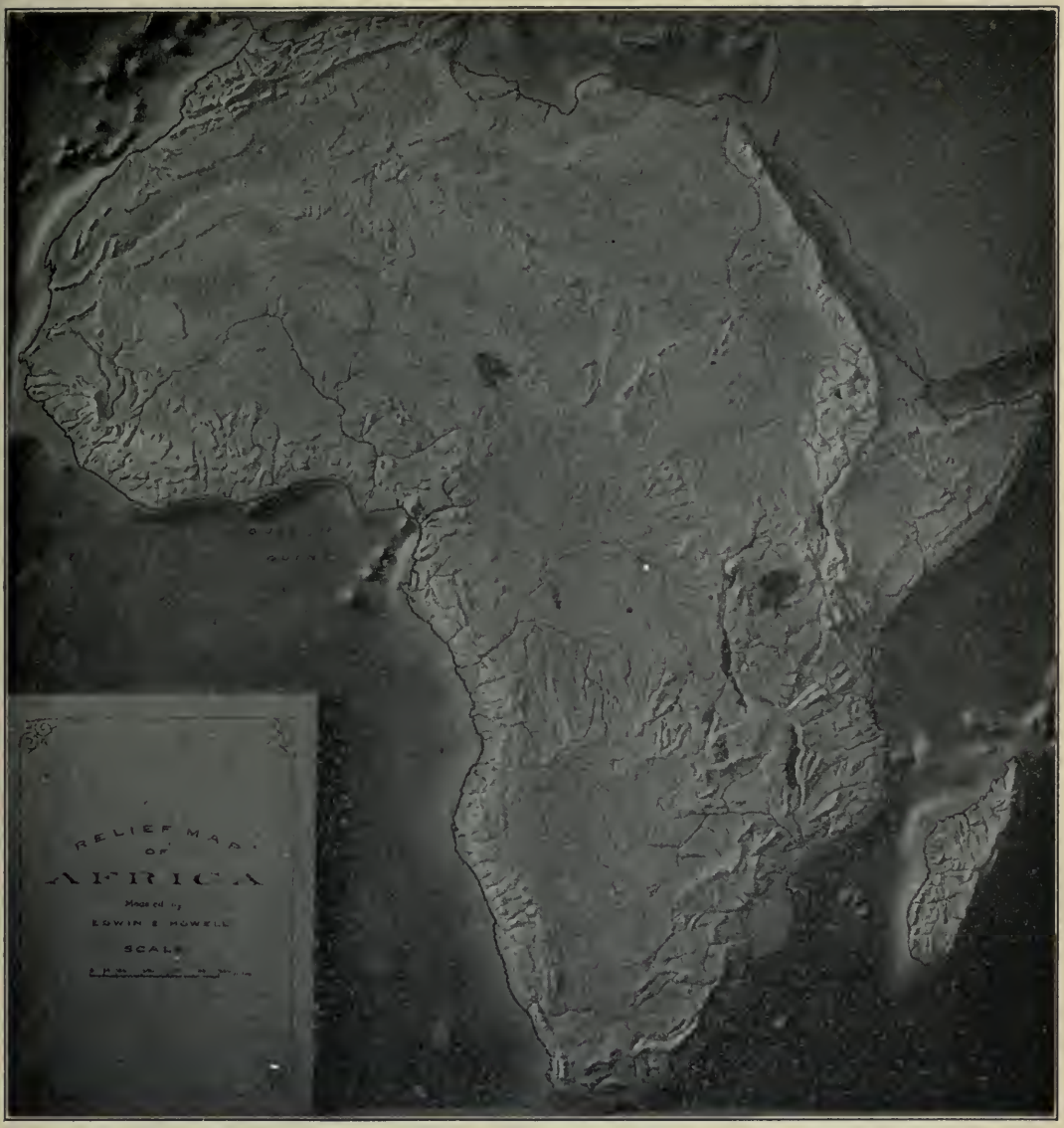


FIG. 611. — Relief map of Africa.

even south of Lake Chad, as you may infer from the fact that this lake has no outlet. What other lakes that you have studied does it resemble in this respect? There is a desert also, though much smaller, south of the equator.

Between these two deserts is a broad tract of tropical country in which there are heavy rainfall and extensive forests. The large number of rivers that have their sources here show that there is abundant rainfall. Parts of this tropical country are very unhealthful. This is especially true along the lower lands near the coast; but on the plateaus the climate is not so hot. On

Fig. 613. — Nomads encamped in the desert of Algeria, south of Biskra.

the northern and on the southern side of the rainy belt, and between it and the deserts, the country has two seasons, one dry, the other rainy. Here the forest disappears and there is grass land, called the *savannas*.

The people

Africa is the home of the negro, and far the largest part of the continent is still occupied by the black race. Some of the negroes are fierce and warlike; others are peaceful. The savages live by hunting, or upon the fruits of the forest; but the negroes living upon the savannas carry on herding and simple forms of agriculture.

Arabs, who belong to the white race, have lived in northern Africa since very early times. Some of them are herders living the life of the nomad (Fig. 613); others, on the oases, and among the mountains, carry on agriculture. There are now many Europeans living in Africa, especially in the southern part.

Africa has been called the *dark continent*. Probably one reason for this is the fact that it is the home of the black man. Another reason is that until recently we have known so little about it. It is one of the oldest continents that history tells us about, and it lies so near Europe that the two almost join at the Strait of Gibraltar; yet it is the least known of all the continents.

Why called the dark continent

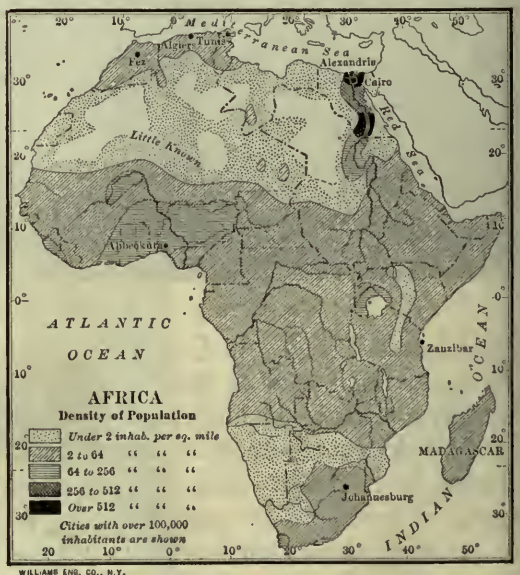


Fig. 614.

There are several reasons why so little is known about Africa. In the first place, the northern part of the continent is a vast desert, fully a thousand miles wide from north to south.

Why Africa is so little known

This vast region, most of which is called the Sahara Desert, is very difficult to cross. It has no roads or railways, and the only way to travel over it is on camels (Fig. 624). There are so few oases that the watering places are usually many miles apart, so that both camels and men may perish from thirst. Frightful sand storms sometimes arise, continuing for hours and even days; and during these the sand is drifted about by the winds, filling the air and sometimes even burying the caravans. If these perils are escaped, there is still the danger of attack from the fierce nomads who live in the desert, and who may rob the caravans, often showing no mercy to travelers.

1. The great desert in the northern part

It is not strange, therefore, that Europeans have failed to become well acquainted with Africa by entering it from the north.

One would suppose that the large rivers would afford means for reaching the interior. Trace the Nile, Niger, Congo, and Zambezi, and notice how far they extend into the continent. If these could be navigated far up toward their sources, as our Hudson and Mississippi rivers can be, they would make excellent highways to the interior; but this cannot be done, for all of them have rapids and falls in their lower courses.

2. The rapids and falls in the rivers

The reason for these falls is that the interior of Africa, like that of both Mexico (p. 263) and Spain (p. 398), is mainly a plateau, whose elevation is from a quarter to a half mile above the level of the sea. In descending from this

FIG. 615. — Natives of Algeria drawing water from a well on the edge of an oasis in the Sahara desert.

plateau, the rivers tumble in cataracts and falls.

One of the largest cataracts is Victoria Falls (Fig. 629), in the lower Zambezi River. The Nile also has several rapids; and there is a great cataract in the Congo. Hence the rivers have been of little assistance in the exploration of the continent.

A third reason why we know so little about Africa is its unhealthful climate.

3. The unhealthful climate

Notice where the Tropics of Cancer and Capricorn cross the continent. From this you see that most of Africa is in the tropical zone. Indeed, the equator crosses it not far from the center, and only the northern and the southern parts are in the temperate zones.

In this tropical region, the low coast lands have too hot and damp a climate for white men; and malaria, as well as other diseases that thrive in a hot, damp climate are common. Generally, therefore, Europeans can live with comfort only upon the high land of the interior. This fact has helped to keep foreigners out of Africa; for it is dangerous even to cross the narrow strip of low coast land.

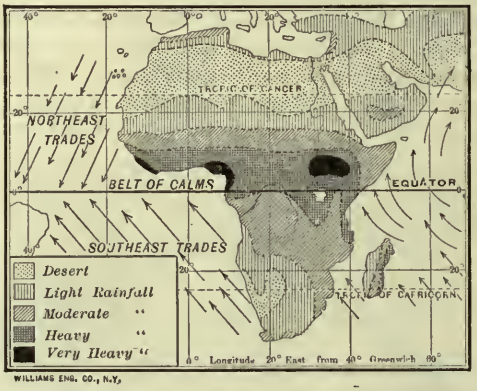


FIG. 616. — To illustrate the desert regions in the trade wind and horse latitude belts of Africa. Also to show the heavy rainfall in the belt of calms. Find the similar belts on Figures 407 and 430.

A part of Central Africa, where the rainfall is very heavy, is covered by a dense forest like that in the Amazon Valley (p. 318). This forest extends north and south for a full thousand miles, and is very difficult to travel through.

4. The forest jungle, the wild animals, and the savages

Besides this, there are many wild animals in the forest and on the open plains to the north and south of it. Among these are the lion, the elephant, the rhinoceros, the hippopotamus, and the giraffe as well as many serpents (Fig. 617). Some of these animals, as the lion, are fierce and dangerous.

Another difficulty comes from the great numbers of savage black men, many of whom are dangerous to meet. For centuries the negroes have been seized and carried away as slaves to various parts of the world. Even to-day, the Arabs seize many of them for that purpose. Such treatment has not helped to make them friendly to white men.

Strange as it may seem, the best-known part of Africa is the very southern tip, the part farthest from Europe. You will notice that this region lies in the temperate zone, which is one reason why Europeans have gone there. Another reason is that, in former days, ships going from Europe to India had to sail around the Cape of Good Hope. In this way men learned about that section; and long before other parts of the continent were occupied by Europeans, the Dutch had colonies in South Africa. This is now the best developed part of the continent.

Why the southern part is best known

Only during the last half century has there been much exploration and settlement in other parts of Africa. In that time, however, some of the countries of Europe have been very active, and have laid

Parts of Africa recently seized by Europeans

FIG. 617. — Some of the wild animals of Africa.

claim to a large part of the continent just as they laid claim to North America several centuries ago.

You can see by the map that Africa is divided into many more countries than our continent has been. What parts are owned by Great Britain (Fig. 476)? By Germany (Fig. 487)? By France? What other countries have colonies there (Fig. 610)? Make a sketch of Africa, showing the sections owned by the three Great Powers of Europe just mentioned.

Improvements made by Europeans

Now that so much of Africa is under the control of Europeans, people are going there to explore and settle, just as people have come to our own country. Thus the continent is rapidly becoming known.

In the past, in most parts of Africa, there have been very few wagon roads. Goods had to be carried either on the rivers or along paths or trails. The natives themselves usually carried these goods on their backs. Now, however, roads, railways, and telegraph lines are being built.

You will see three large lakes on the eastern side, south of the equator. What are their names? Each of these is important for navigation, for upon them steamboats can go long distances. The rivers also are much used for navigation. Above and below the waterfalls of the Congo, the Nile, and other rivers, boats can run long distances. With the aid of railroads built around the falls and rapids, these rivers are now becoming of great value for transportation.

The boldest plan of all is to build a railway from the Cape of Good Hope to Cairo in Egypt to be called the Cape-to-Cairo route. Doubtless, in time, one will be able to travel by rail all the way from Cape Town to the Mediterranean Sea.

2. Northern Africa

Character of the people

The northern part of Africa has long been occupied by the white race. Indeed, in early days, when the Greeks and Romans were flourishing, there were large and important cities along the coast of northern Africa.

Later, Arabs from Asia spread westward over that section, and their descendants still occupy the region. Like the Turks (p. 410), they are Mohammedans, and they still make pilgrimages to the holy city, Mecca, in Arabia. Their manners and customs are very different from those of Europeans. Indeed, they still live much as the people of western Asia did in the first century. They know little about the rest of the world, and carry on hardly any trade with other people. Their manufacturing is done by hand, and the chief products of the country are those needed for the simplest food, clothing, and shelter.

Egypt, the oldest country

1. Its ancient history

The best-known country in this section is *Egypt*, which is crossed by the Nile River. This is the country over which the Pharaohs, the kings of Egypt, used to rule. Ruins of their buildings, and their immense pyramids (Figs. 618, 619), built thousands of years ago, may still be seen. Here, the Bible tells us, Moses once lived; and Joseph, also. What stories do you remember about them?

2. How the Nile River supports the inhabitants

Egypt is a desert country, like Arabia to the east and the Sahara to the west. Yet Joseph's brothers, you may remember, went down into that country from Palestine, to get food. It is still a great agricultural region.

The fact that Egypt is so productive is due to the Nile River. This great river rises far to the south in the tropical part of Central Africa; and each year, in the rainy season, the floods are so great that the Nile overflows its banks. The water, carrying a large quantity of sediment, has built a fertile flood plain on either side of the river, and a broad delta at its mouth (Fig. 622). The annual floods spread over these broad plains. Each overflow leaves a thin layer of rich mud, and at the same time provides the water necessary for crops. Thus each year the river both waters and fertilizes a vast tract of land. In this way, for thousands of years, millions of people have been supported in the midst of the desert.

FIG. 618. — The Sphinx in the Egyptian desert.

3. The agricultural products

Egypt lies just north of the Tropic of Cancer, and therefore it has a warm temperate climate. It is so warm there that crops like those of our Southern States can be produced. Among the principal products are grain, cotton, and sugar cane.

The Nile valley is the seat of a great grain industry, producing wheat, corn, millet, and barley. Much rice and sugar cane also are raised, and much cotton, which is of especial value because of its long fiber. There are many vineyards, and orange, lemon, and fig groves; and both along the Nile and on the oases of the desert there are groves of date palms. Grazing is important in the Nile Valley and on the neighboring plateau. The animals raised include the buffalo and the camel, in addition to sheep, goats, cattle, horses, and donkeys.

FIG. 619. — One of the pyramids.

4. The Suez Canal

The eastern part of Egypt includes the Isthmus of Suez, which connects Africa with Asia. Because of this narrow neck of land, ships sailing from Europe to Asia were long compelled to go all the way around Africa. In 1869 a canal eighty-seven miles long, and wide and deep enough for large ocean ships, was opened across the Isthmus. On a globe, estimate how many miles are saved by the Suez Canal (Fig. 620) in making

a journey from London to Calcutta. Name the cities at the two ends of the canal.

Fig. 620. — Ships passing through the Suez Canal.

5. Government The government of Egypt is peculiar. There is a ruler called the *Khedive*, the country being a monarchy. But Turkey claims control of Egypt, and the Khedive is obliged to pay an annual tribute, in money, to Turkey. In addition, the English have a share in the government, for they have control of the finances of the nation. Furthermore, the British have taken possession of a large area of country south of Egypt. What are the names of these English possessions? The Nile flows through much of this territory, and the best entrance to it is up the Nile Valley. This is an added reason why the British should wish to keep control of Egypt, at the mouth of the Nile.

As a result of British direction, there has recently been much progress in Egypt and the Sudan. Extensive irrigation works have been undertaken, by which the area for raising cotton and sugar cane has been greatly increased. By means of reservoirs and canals it is further planned to reclaim thousands of square miles of the desert. Several railway lines also have been built (Fig. 622), including a part of the proposed line from Cairo to Cape Town. Outside of the Nile Valley, however, travel still depends largely upon the use of camels (Fig. 619).

6. Leading cities At the head of the delta, just above the point where the Nile branches (Fig. 622), is Cairo, the capital and the largest city of Egypt and, in fact, of all Africa. This interesting place is visited each year by a stream of tourists, some attracted by its pleasant winter climate, others by the strange life of the country, or by the remarkable ruins of its ancient civilization (Figs. 618, 619).

Fig. 621. — An Arab woman in the streets of Cairo.

Cairo itself contains the palace of the Khedive, several interesting mosques, and a museum in which there are many Egyptian relics and works of art. The natives also attract attention, for in the streets may be seen many people, with different languages and peculiar customs (Fig. 621). The differences among the people are indicated by the following fact: There are three Sabbaths each week: Friday, the Sabbath of the Mohammedans; Saturday, observed by the Jews; and Sunday, by the Christians.

Alexandria, connected with Cairo by rail, is the seaport of Egypt and the

second city in size. More than half the trade is with Great Britain.

Far up the Nile, in Sudan, is KHARTUM, now reached by the railway.

The Barbary States

West of Egypt are four countries, often called the *Barbary States*. What are their names? *Morocco*, the westernmost, is an independent country, ruled by an absolute monarch called the Sultan. *Tripoli*, the easternmost, belongs to Turkey; but the two countries between, *Algeria* and *Tunis*, are French colonies. In Tunis, however, there is still a native monarch, called the *Bey*.

1. Their surface and climate

The Atlas Mountains skirt the Mediterranean coast from the Atlantic Ocean to Tunis, where they project into the Mediterranean, forming the most northerly point in Africa. These mountains cause vapor to be condensed when winds blow from the ocean or from the Mediterranean. For this reason many of the valleys among the mountains are well watered.

FIG. 622. — The lower Nile. The shaded area between the two deserts is farming land, which is reached by water from the river. The numerous crossed lines are railways. Find the Pyramids. Why is the location at the head of a fertile delta, and at the outlet of a narrow river valley bounded by desert, a favorable one for a large city?

Each of the Barbary States extends far southward into the Sahara Desert,

FIG. 623. — Algerian natives plowing with a camel on an oasis in the desert.

and throughout most of this great area few people are able to live. Only on the oases, of which there are about four hundred, is there water for irrigation and for drinking (Fig. 615).

Forests cover some of the mountain slopes, and one of the valuable trees is the cork oak. Large numbers of camels, sheep, goats, and cattle are raised among the mountains and upon the plateaus.

2. Their products

Agriculture is carried on here and there, often by means of irrigation, with water supplied by the mountain snows and rains, as in southern California. Among the crops are dates, grains, figs, grapes, and olives. Wine from the grapes of Algeria is shipped in large quantities to France; and much olive oil, and the best dates in the world, come from Tunis.

The mountains contain many valuable mineral products, including precious metals in Morocco and Algeria, and marble and alabaster in the latter country. Little use is made of these minerals, however.

3. Caravan trade

A part of the trade of the Barbary States is in products from tropical central Africa, including ostrich feathers, skins, and ivory. These are brought by caravans across the Sahara Desert (Fig. 624).

One of the important routes is from TAFILET in Morocco, southward to TIMBUKTU, and the trip requires fully three months. Estimate the distance. There may be from a thousand to fifteen hundred camels in a single caravan, and a full year may be needed to get it ready. Each camel is carefully selected by the chief of the caravan, and extra camels are taken to replace those that give out on the journey. Usually about a third of the animals perish in the round trip; and before the return journey is begun, it is necessary to give those that live a rest of several weeks.

FIG. 624. — A caravan of camels crossing the Sahara Desert, bearing a load of the products of the tropical region of Central Africa.

There is one driver for every dozen camels. Upon starting, the loads are carefully packed on the camels' backs, each animal bearing about three hundred pounds. A day's march lasts sixteen hours, the camels traveling some thirty abreast, at the rate of about two miles an hour. Ordinary camels cannot travel more than three days without drinking; but the better grades are able to go six or seven days without water, and with almost no food.

FIG. 625. — An Arab school in northern Africa.

4. Character of the inhabitants

The people of the Barbary States are not very progressive, and many of them are fierce and warlike; and, being Mohammedans, they have a deep hatred for Christians. There has, however, been some progress in Algiers and Tunis, under the influence of the French, especially in the cities and along the Mediterranean.

These people are seen at their worst in Morocco. Here many of the inhabitants are still barbarians, and some of the tribes among the mountains even refuse to recognize the rule of the Sultan. On the whole the people are cruel and treacherous, and if a vessel is wrecked upon their coast, it is sure to be plundered by them. Even within the last few years, Europeans have been seized and held for ransom.

Conditions of life in Morocco are illustrated by the following: The writer once visited a school in Tangier in which there were a dozen boys from nine to ten years of age. The room where they studied received its only light from the open door, and there were no seats, desks, or furniture of any kind. The children sat on the floor, around a long-bearded old man, who also sat on the floor; and the only object that each had before him was a page from the Koran, or Mohammedan Bible. What does such a condition of education suggest in regard to progress?

5. Principal cities

The capitals are the principal cities among the Barbary States. FEZ, one of the capitals of Morocco, is in the interior; but the Sultan does not live there all the year. Name the other capital. TANGIER, on the coast, is better known. In Algeria, the seaport, ALGIERS, is the capital and the largest city. Under the French it has become an important trading center. The same is true of TUNIS, the capital of the country by that name. Locate the capital of Tripoli.

3. SOUTHERN AFRICA

The Dutch were the first to colonize the southern part of Africa. They took possession of the country occupied by the

negroes, and introduced the industries of farming and ranching. Now the British control all this region, and the Dutch settlers, called *Boers*, are subjects of the British Empire. Formerly there were several separate colonies, the most important being *Cape of Good Hope*, *Orange Free State*, *Natal*, and *Transvaal;* but these are now united under a single colonial government, or confederation, as the different parts of Canada are.

Control of the region

The British have also laid claim to a large tract of tropical country north of the Dutch colonies, called *Rhodesia*.

At present, therefore, the British control a broad strip of territory from the southern tip of Africa northward to the southern end of Lake Tanganyika. What are the names of the colonies west of the British Territory? ANGOLA is a Portuguese colony. What nation controls the other? What country owns the section east of Rhodesia?

FIG. 626. — A Zulu woman making a carpet.

Although there are many British and Dutch settlers in South Africa, there are still more negroes, particularly in the tropical regions. Some of them, like the Zulus (Fig. 626), have fiercely opposed the advance of the whites, and still maintain partial independence. They have made some progress toward civilization.

Agriculture

Along the eastern coast, and in some of the interior valleys, agriculture is an important industry. Sugar cane, bananas, pineapples, tea, coffee, and rice are raised near the coast, where the climate is warm and damp. But wheat, tobacco, vegetables, and grapes are grown in the cooler south.

Much of South Africa is an arid plateau, where agriculture is possible only by means of irrigation. Upon this plateau, therefore, grazing is the chief industry. Immense numbers of cattle, sheep, and goats are raised, and also many ostriches (Fig. 627). From this it follows that the production of wool, hides, meat, and ostrich feathers is of importance. Why are the first three of special value to Great Britain?

The discovery of very rich deposits of gold in South Africa has brought great changes, as it did in the arid sec-

tion of the western United States. The gold is found scattered through a large bed of rock in the Transvaal, near the city of JOHANNESBURG. This is now the leading gold-producing region in the world; indeed, more gold is mined here than in the whole of North America.

Mining

There are other valuable minerals, such as copper, iron, and coal; but as yet they have been little developed. At KIMBERLEY, in Cape of Good Hope, there are wonderful diamond mines, that now supply most of the diamonds used in the world.

FIG. 627. — Ostriches on an ostrich farm in South Africa.

The diamonds occur as rounded crystals in a partly decayed volcanic rock, and are obtained by digging out the soft rock and carefully removing the crystals (Fig. 628). After this, the crystals must be cut into the proper shape and polished. There are various grades, some clear and beautiful, others impure and dull. So productive is this deposit of precious stones that it has already yielded three hundred million dollars' worth of diamonds.

FIG. 628. — Workmen picking out diamonds at Kimberley.

The two chief rivers of South Africa are of little use as trade routes. The Orange River is not navigable because of lack of water. The other large river, the Zambezi, is navigable in its lower portion, by small boats; but the climate near the coast is warm, damp, and unhealthful. Rapids check further navigation, and at one point there is a cataract, the Victoria Falls, which

The lack of conveniences for transportation

rivals even Niagara in grandeur. This cataract has a width of more than a mile, and a height of four hundred and fifty feet (Fig. 629). It is therefore both wider and higher than Niagara; but the volume of water is smaller.

Fig. 629. — The Victoria Falls in the Zambezi River of South Africa.

As you can see on the map (Fig. 610) there are now a number of railways in the southern part of Africa; and one extends even into Rhodesia.

The largest city of Cape of Good Hope, and the chief seaport, is Cape Town. It is connected with the interior by a railway, which forms the southern end of the proposed railway from Cape Town to Cairo.

Principal cities

A second important harbor is that of Delagoa Bay, upon which is situated Lourenço Marquez, the capital of Portuguese East Africa. Being connected by rail with the interior, this port has been much used for the shipment of Transvaal products. Durban, the seaport of Natal, is a small city, also connected with the Transvaal by rail. The two principal interior cities are Kimberley and Johannesburg. For what are they noted (p. 459)? There is no important town in German South Africa, which for the most part is an arid plateau. To what nation does *Walfisch Bay* belong?

4. Central Africa

This vast area is in large part unknown. Much of it is tropical forest; but on the northern and southern sides are open savannas (p. 448).

Because of the heavy rainfall of the forest belt, the rivers are large. The Nile and Zambezi, already described, and the Niger and Congo, all receive water from the equatorial rains. The Niger is navigable in sections; but there are rapids in some parts, and because of the dry climate the river grows shallow toward the north. Its large tributary, the Benue, is navigable.

Value of the rivers for transportation

It is the immense Congo that offers the best natural highway to central Africa. There is a series of falls in the river a short distance from the coast; but above these there are thousands of miles of navigable waters in the main river (Fig. 633) and its tributaries. A railway, two hundred and fifty miles in length, connects the lower Congo with Leopoldville, above the falls. Thence, at all seasons of the year, steamers may go a thousand miles up the river, and also into many of the tributaries.

Very few Europeans have settled in central Africa, and as yet there are no

large towns. The native blacks, who are still in a state of savagery, live for the most part in villages, in huts made of brush, or some similar material (Figs. 630, 631). Some of the tribes are cannibals.

The native inhabitants

FIG. 630. — Negroes and a native hut in Central Africa.

European nations have been active in claiming the greater part of central Africa; but they have little real control over the natives. The following are some of the more important parts of central Africa. Locate each one on the map.

Divisions of this region

The Sudan includes the vast area that lies between the Sahara and the tropical forest. A large part of it is savanna country. More than half of the Sudan is claimed by the French, and most of the remainder, including *Nigeria* and the *Egyptian Sudan*, is held by the British. What other British possessions do you find on the map? There is some gold in the west; but the principal products are ivory (Fig. 632), ostrich feathers, ebony, rubber, and gums.

1. The Sudan

East of the Sudan is *Abyssinia*, which is, for the most part, a rocky plateau, crossed by mountains. The inhabitants, who are mainly of the white race, adopted Christianity more than fifteen hundred years ago; but they are not now a very progressive people. The exports of

2. Abyssinia and surrounding territory

FIG. 631. — A negro village in Africa.

FIG. 632. — Negroes of Africa carrying the huge ivory tusks of the elephant.

Abyssinia include coffee, hides, skins, ivory, and gold.

Abyssinia is surrounded by colonies of other nations. Italy holds *Eritrea* and *Italian Somaliland*. What two other nations hold a part of the coast on the border of Abyssinia?

3. Small countries on the west coast

The map shows several small countries on the west coast of Africa. The divisions colored pink belong to the British; those marked green to the Germans. What are some of their names? Find a section belonging to Spain. What parts are controlled by France?

One of these small countries is *Liberia*, which is of especial interest to Americans. It is a negro republic, established in 1822 by Americans as a home for freed slaves; and its capital, MONROVIA, is named after President Monroe. The republic was modeled after *Sierra Leone*, next to it on the west, which the British founded still earlier as a home for liberated slaves.

4. Belgium Congo and neighboring territory

Belgian Congo, crossed by the Congo and its tributaries, is now under the control of Belgium. It is in large part a forest-covered plateau, but there are extensive areas of grass land. Hordes of savages inhabit the forests and the savannas; the buffalo, elephant, and leopard live on the plains; and the roar of the lion is frequently heard. Large quantities of rubber, ivory, palm oil, gum, and cocoa, as well as tropical woods, are obtained from this region. Some gold also is exported.

How many different nations have possessions along the borders of the Belgian Congo? Name the possessions that belong to each country. Observe to what extent the British claim Africa. What break is there in the British territory between the Cape of Good Hope and the Mediterranean? What varieties of climate do these British colonies include?

The need of more railways here

Several railways have already been built from the coast of Africa toward the interior. Find some of those on the map (Fig. 610). We have seen, also, that some of the great rivers are useful for the transportation of goods (Fig. 633). So also

FIG. 633. — A steamboat on the Congo.

are the three large lakes — Nyassa, Tanganyika, and Victoria Nyanza. Already there are steamers upon these lakes. A railway connects Victoria Nyanza with the sea, and others are planned. But many more railways are needed; for otherwise caravans of native porters must bear the products on their backs, traveling along narrow paths through the forest.

5. Islands near Africa

The island of Madagascar, controlled by the French, is larger than any of our states except Texas. It lies a little more than two hundred miles from the mainland, and produces cattle, hides, valuable tropical woods, rubber, and coffee.

Islands on the east side

The principal small islands on the eastern side of Africa are *Zanzibar* (British) near the coast, and *Réunion* (French), and *Mauritius* (British) east of Madagascar. Find each of these (Fig. 610). There are many others, as you can see. These islands are of value as naval stations.

Islands on the west side

Of the many small islands near the western coast the northernmost are the *Madeira Islands*. These, together with the *Cape Verde Islands* farther southwest, belong to Portugal. The *Canary Islands*, which belong to Spain, lie between these two groups.

Ascension Island and *St. Helena*, south of the equator, belong to Great Britain. St. Helena is noted especially as having been the prison home of Napoleon Bonaparte.

Review Questions

1. Describe the surface features of Africa. 2. What kinds of climate are there? 3. What can you tell about the people? 4. Why is Africa called the dark continent? 5. How has the Sahara Desert prevented the exploration and settlement of Africa? 6. How have the rapids and falls in the rivers interfered with its exploration? 7. State how the climate has had similar effect. 8. How have the forests, animals, and people likewise kept Europeans away? 9. How does it happen that South Africa is the best-known part? 10. What parts of Africa have been recently seized by Europeans? By what nations? 11. What improvements have been made by Europeans? 12. Tell something of the character of the people in northern Africa? 13. What do you know about the ancient history of Egypt? 14. Explain how the Nile River helps to support the inhabitants. 15. Name the agricultural products of Egypt. 16. Locate and describe the Suez Canal. 17. Tell about the peculiar government of Egypt. 18. What have the British done to improve the country? 19. Locate and state the chief facts about the leading cities. 20. Name, locate, and tell about the government of the Barbary States. 21. What about their surface and climate? 22. Their products? 23. What can you tell about the caravan trade? 24. What is the character of the people? 25. Name and locate the principal cities. 26. What nations control the southern part of Africa? 27. Name the parts controlled by the British. 28. What do you know about the agriculture there? 29. The mining? 30. The lack of conveniences for transportation? 31. Locate and state the chief facts about the leading cities. 32. How valuable are the rivers of central Africa for transportation? 33. Tell about the native inhabitants. 34. Locate the Sudan and name its divisions. What products are there? 35. State the principal facts about Abyssinia and surrounding territory. 36. Name and locate the small countries on the west coast. 37. State the principal facts about the Belgian Congo and neighboring territory. 38. Explain the need of railways there. 39. What can you tell about Madagascar? 40. Locate several island groups near Africa. To what nation does each group belong?

General Review, with comparisons

1. What rivers of North America resemble those of Africa in having rapids and falls that interfere with commerce? How have these obstacles been overcome in America? 2. Compare, as to length, the Congo with the Missouri (see Appendix); with the Amazon. 3. Make a drawing of the Nile and one of the Mississippi, showing the principal tributaries and cities. How do the two compare? 4. Compare the area of Lake Victoria Nyanza with that of Lake Superior. 5. Make a sketch

map of the Atlantic Ocean, and compare the position of Africa with that of South America. What part of the New World is in the same latitude as the Sahara Desert? 6. Cape Horn is how much farther south than Cape of Good Hope? 7. Compare southern Africa with southern South America in products and importance. Why the difference? 8. What products of Africa are cultivated also in the United States? 9. What products of Africa are not raised in our country? 10. Give reasons why the United States is a better country for white men to live in than northern Africa. Than central Africa.

Suggestions

1. Read the story of Joseph in the Bible beginning in Genesis, chapter 37. 2. Read the story of Moses. 3. Find out some facts about the Pyramids. 4. Why are the British especially benefited by the Suez Canal? 5. What obstacles are there in the way of building railways across the Sahara? 6. Find out some facts about our short war with Tripoli in 1804. 7. Learn something about the missionary work in Africa. 8. Why has the Nile no large tributaries in its lower course, and the Niger none in its upper course? 9. Find some object made of ivory, and show it to the class. 10. Find out about the peculiar animal life upon the island of Madagascar. 11. Why was the southern point of Africa called the Cape of Good Hope? 12. Who were Bartholomew Diaz and Vasco da Gama, and what part did they take in the discovery of the water route to India? 13. Find some facts about the great African explorers of the last century, — such as Livingstone, Mungo Park, and Stanley. 14. Read one of the books of these explorers; you will find Du Chaillu's books on Africa very interesting reading. 15. Find out about the war between the British and the Boers, by which Great Britain gained control of the Dutch territory. 16. Draw an outline map of Africa and put in the principal countries, colonies, rivers, and cities.

SECTION III. AUSTRALIA, THE EAST INDIES, AND OTHER ISLANDS OF THE PACIFIC

Map study

1. Find Australia on a globe, and show how you would reach it by ship from New York. Through what waters would you pass (Fig. 107)? 2. How would you reach it from San Francisco? 3. In what part are most of the mountains? 4. The rivers? 5. The cities? 6. In what zones is Australia? What does this tell you about its temperature? 7. What parts of South America and of Africa are in the same latitude as southern Australia? 8. What are the principal islands of the East Indies? 9. In what direction are the Philippine Islands from Australia? Estimate the distance. 10. Find the Hawaiian Islands; New Zealand. 11. How does Tasmania compare in area with Pennsylvania? (See Appendix.) With your own state? 12. Make the same comparison for New Zealand. 13. For Borneo and New Guinea. 14. What nations claim parts of Borneo? New Guinea?

1. Australia

Location and area

Australia lies apart from the rest of the world. It is the smallest of the continents, the only continent wholly surrounded by water, and the only continent wholly in the southern hemisphere. With its area of nearly three million square miles, it approaches in size the United States and Europe.

Ownership of this continent

The names of the three eastern divisions of the continent — Victoria, New South Wales, and Queensland — suggest the country to which Australia belongs. What one is it? The British control only a part of the other continents, but Australia, the smallest of all the continents, they have entirely to themselves.

As in Canada, the several states, including the island of Tasmania on the south, have combined to form a Union. Together they form a British depen-


AUSTRALIA AND ISLANDS OF THE PACIFIC
Scale of Miles
0 200 400 600 800 1000
Cities with over 200,000 Manila
Cities with 100,000 to 200,000 Adelaide
Cities with 50,000 to 100,000 Dunedin
Smaller Places Goulburn
Capitals with less than 50,000 HOBART
Capitals
Other Cities
Railroads
INDIAN OCEAN
MICRONESIA
MELANESIA
POLYNESIA
PACIFIC OCEAN
EAST INDIES
AUSTRALIA
CORAL SEA
ARAFURA SEA
BANDA SEA
JAVA SEA
CELEBES SEA
SOUTH CHINA SEA
PHILIPPINE ISLANDS
CAROLINE ISLANDS
MARSHALL ISLANDS
GILBERT ISLANDS
FIJI ISLANDS
SAMOA ISLANDS
HAWAIIAN ISLANDS
NEW HEBRIDES
NEW CALEDONIA
SOLOMON
BISMARCK ARCHIPELAGO
NEW ZEALAND
TASMANIA
WESTERN AUSTRALIA
NORTHERN TERRITORY OF SOUTH AUSTRALIA
SOUTH AUSTRALIA
QUEENSLAND
NEW SOUTH WALES
VICTORIA
Sydney
Melbourne
Adelaide
Brisbane
Newcastle
PERTH
HOBART
Auckland
Wellington
Christ Church
Dunedin
Singapore
Bangkok
Saigon
Manila
Batavia
BORNEO
CELEBES
TIMOR
TROPIC OF CAPRICORN
WILLIAMS ENGRAVING CO., N.Y.
Longitude East from Greenwich
Longitude West from Greenwich

FIG. 634.

PHYSICAL MAP OF
AUSTRALIA
AND
ISLANDS OF THE PACIFIC
Scale of Miles
0 200 400 600 800 1000
KEY
Over 6,500 ft.
From 1,650 to 6,500 ft.
From 650 to 1,650 ft.
From 0 to 650 ft.
Sea Level
From 0 to 6,500 ft.
From 6,500 to 13,000 ft.
Below 13,000 ft.
ASIA
PACIFIC OCEAN
INDIAN OCEAN
AUSTRALIA
EAST INDIES
NEW GUINEA
BORNEO
SUMATRA
JAVA
CELEBES
PHILIPPINE ISLANDS
CAROLINE ISLANDS
MARIANNE ISLANDS
NEW ZEALAND
NORTH ISLAND
SOUTH ISLAND
TASMANIA
CORAL SEA
GREAT BARRIER REEF
SOUTH CHINA SEA
TROPIC OF CAPRICORN
EQUATOR
WILLIAMS ENGRAVING CO., N.Y.

FIG. 636.

FIG. 635. — Relief map of Australia.

FIG. 637. — A view in the forest of eastern Australia. Notice the huge tree ferns that grow here.

On the rainy slopes, near the coast, some of the gum trees are giants. They rival the "Big Trees" of California, which also thrive where damp winds blow from the ocean. The undergrowth of the forest (Fig. 637), which is almost tropical in character, includes tree ferns, palms, and orchids. These dense woods are called the "bush."

None of the fierce animals, as bears, wolves, tigers, and lions, that are common in other continents, are found in Australia. The largest animal is the kangaroo (Fig. 639), which instead of running on all fours, jumps along on its hind legs, using its tail for support. There are other peculiar animals unlike those living in other parts of the world. Name some of those shown in Figure 639.

dency, as Canada does. This is called the *Commonwealth of Australia.*

Native plants, animals, and people of Australia

When the English began to settle Australia, more than a century ago, they found very strange plants, animals, and people there. Indeed, these were quite different from those found elsewhere.

Among the desert grasses, one of the most remarkable is the porcupine grass, which is so hard, wiry, and spiny as to make passage through it difficult.

The "scrub" trees of the arid interior have developed a foliage able to resist evaporation. For example, the gum trees (Eucalyptus) hold their narrow leaf blades vertically, with only the edges toward the sun's rays; the leaves of wattles (Acacia), and other plants, have shrunk to thorns; and some trees secrete odorous oils that check evaporation. Plants with leaves that taste of salt also thrive here. These "salt bushes" are so valuable as forage for sheep and cattle that they have been introduced into the arid section of southwestern United States.

FIG. 638. — Australian natives, who have just killed a kangaroo with the boomerang. The boy holds a boomerang in his hands.

FIG. 639. — Some of the Australian animals.

The native people were found to be a very low class of savages, and as some of them live in "the Bush" just mentioned, they came to be known as Bushmen. Some of these natives still live

FIG. 640. — Density of population in Australia and neighboring islands.

in the interior, building the rudest of shelters, and gaining their living by hunting. They still use a peculiar weapon, the *boomerang* (Fig. 638), which, when skillfully thrown, will fly in curves and even return to the thrower.

When the English took possession of Australia, it seemed to be of little importance. At first it was used mainly as a *penal colony*, or prison, to which criminals were sent. It was a very secure prison, too, for there was little danger that a man sent there would soon reach home again.

The first use made of the continent

As the continent came to be better known, however, people began to go there of their own accord to live. Australia has now more than four million inhabitants, who instead of being distributed equally over all parts of the continent, are collected mainly in the southern and eastern portions (Fig. 640).

Present population and its distribution

The temperature is not the chief cause of this, for that is pleasant enough in most parts of Australia, as you can infer from the latitude. Show this by means of the map (Fig. 634). What portion is in the tropical zone?

The reason for this distribution

The great difficulty is the lack of rain, and this is due to the location of the mountains and the direction of the winds. The larger part of Australia is a low plateau, with the chief mountain range on the eastern side. Point out these mountains. What are they named? In the southeast some of the peaks reach a height of more than a mile.

The prevailing winds come from the southeast (Fig. 641), so that they must blow over these mountains before reaching the interior. This causes heavy rainfall on the eastern slopes; but as the winds continue on toward the interior, they become very dry. At a distance of one hundred and fifty miles

FIG. 641. — Showing the heavy rainfall on the east facing coast of Australia, where the trade winds blow. Notice also the arid interior and west coast. What is the condition in the belt of calms? What resemblance do you see to Figure 430?

from the coast it is so dry that farming without irrigation is impossible; the only exception being what is called "dry farming." Farther west still, there are extensive deserts. How does this resemble the condition in the northwestern part of our own country (p. 205)?

If you examine the map, you will see signs of the desert, for some of the rivers flow into lakes that have no outlet. These lakes, therefore, are salt, like the Great Salt Lake of Utah. There is so little rainfall in the interior that the Murray River becomes smaller toward its mouth; and its chief tributary, the Darling, dries up almost entirely in its lower course. Such rivers cannot be of use for navigation, and therefore, unlike the Mississippi, they have no large cities along their banks.

When it is remembered that the northern part of Australia has a tropical climate, and that the central and western parts are arid or desert, we can understand why most of the people live in the southeastern part. What good farm land there is, is found mainly there; here is the chief river, the Murray; and here are the principal cities.

Fortunately the coast line in southeastern Australia is also favorable to settlement. For long distances the coast elsewhere is so regular that there are no good harbors; but the sinking of the land in the southeastern part has formed excellent ports, on some of which large cities have grown.

Agricultural products

Finding native plants and animals of little use, the English began to import others. Merino sheep, for instance, were taken there and found to thrive (Fig. 642).

Sheep were first known in Asia; and

Fig. 642. — A flock of sheep in the sheep raising country of New South Wales in Australia.

Fig. 643. — Harvesting oats in Australia.

the ancestors of the Merino were such as those tended by Jacob. From Asia the breed spread along the Mediterranean and found in Spain a favorable, dry climate. From this point flocks were taken to the early Dutch colony of South Africa, and thence to Australia. Here the dry climate and the native plants have still further improved the quality of the wool.

In the early days of Australia the flocks were reared upon the unfenced government land, as in the western part of the United States (p. 214). The sheep were driven to pasture and watered and cared for at night by lonely shepherds, much as in the days of David. Now, however, the land is largely fenced with wire, each sheep station having its own *run*, or ranch. To-day, grazing is the leading occupation in Australia, the best section for sheep raising being Victoria and New South Wales (Fig. 642). There are more than eighty-three million sheep, and wool is the principal export of the commonwealth.

Horses, cattle, and swine also are raised in large numbers; and frozen and canned beef, mutton, hides, and tallow, are exported. Many cattle are raised for dairy products, and butter is sent to England. At the season when the cows of Belgium and Denmark are kept in barns on account of the cold, the dairy herds of New South Wales feed on fresh pastures. How can you account for this fact?

Wheat, corn, and oats flourish also (Fig. 643); and many fruits and vegetables, such as we raise in our country, are grown in southeastern Australia and in Tasmania. Farther north, in the torrid zone, tropical fruits are raised, and there are also valuable products from the tropical forests.

Other farm products are sugar, cotton, and rice. Much fruit is raised; oranges in the north, and the orchard products

and small fruits of cool temperate lands, in the south. In Victoria and South Australia, there are many vineyards.

Minerals

Australia is a noted mineral region, producing much gold. Almost at the same time that gold was discovered in California, it was also found in Australia, and tens of thousands of people rushed there to wash the sands for the precious metal. For many years this continent has ranked as one of the leading gold-producing regions of the world. Silver, copper, iron, coal, and other mineral products also are mined here.

Manufactures

Manufacturing is not yet greatly developed in Australia. Some wool is woven into cloth; some leather is tanned and made into shoes; and much flour is made from the wheat. There are sawmills and planing mills; and other forms of simple manufacturing are carried on. But most of the wool, hides, and metals are exported; and since this is a British colony, they go mainly to England. Some of the imports, many of which are received from England, you can probably name. Gradually, however, the Australians are developing manufacturing, and are thus coming to depend upon themselves.

FIG. 644. — A street in Sydney, New South Wales.

Principal cities

Since the people and the industries are found mainly in the humid southeastern part of Australia, we see why several large cities have grown up in that section. The largest is MELBOURNE, the capital of Victoria, and the principal seaport, beautifully situated at the head of a broad harbor. The next in size is SYDNEY (Fig. 644), the capital of New South Wales, which is almost as large as Melbourne. It is

FIG. 645. — One of the grand fiords on the coast of New Zealand, where there is some of the finest scenery in the world.

the oldest city of Australia. ADELAIDE, the capital of South Australia, is the third city in size. What is the capital and the chief city of Tasmania? Of Queensland?

One third of the Australian people live in the capitals of the six divisions of the commonwealth. These capitals are seaports connected with the interior by railway, and have therefore become important cities. They have fine government buildings and large public parks and gardens. A few mining centers, like BALLARAT and BENDIGO, in Victoria, have become large towns.

2. NEW ZEALAND

More than a thousand miles southeast of Australia are the two large mountainous islands of New Zealand, the North Island and the South Island. The surface of these islands is very rugged, and there is much wonderful scenery (Fig. 645). The mountains are very grand, and some of the highest peaks are volcanic cones. Heavy snow falls upon the high mountains of South Island, and from these snow fields large glaciers descend through the mountain valleys. In North Island there are active volcanoes, and also hot springs and geysers (Fig. 646), like those of the Yellowstone National Park.

1. Surface and climate

FIG. 646. — A geyser in eruption in New Zealand.

Since these islands lie in the belt of stormy west winds, there is heavy rainfall on the western slopes. The mountains are consequently clothed with forests of pine and other trees. On the lee, or eastern, slopes the rainfall is less, and the land is covered with wiry grasses. What effect must the presence of the ocean on all sides have upon the temperature?

The native people, or *Maoris*, who must have come to the islands in boats, were a hardy, warlike race, living in protected villages, in the midst of cultivated fields. At first they opposed the white men, and the country was not settled until a half century after the founding of Sydney. After a time the Maoris were conquered, and those that survive live mostly in the interior of the North Island. Many of them are civilized, and they are now allowed representatives in the legislature.

2. Native inhabitants

As in Australia, grazing is the leading industry. There are twenty million sheep, and wool and frozen mutton are exported to England. Cattle likewise are raised, and butter is exported. Agriculture is important, but much land that is suited to farming has never been cleared of forest.

3. Industries and government

In the south the crops are those of the cool temperate belt; but in the north the climate is mild enough for the growth of oranges. There are gold, silver, and coal mines among the mountains, and valuable timber is obtained from their slopes. Manufacturing is not greatly developed, and is chiefly for home use.

The situation of these islands, in the

temperate zone, is favorable to rapid progress, and the British people who have settled here have done much to develop the resources. They have also established one of the best governments in the world. Being so far away from Australia, and therefore with such different interests, New Zealand has not joined the Australian commonwealth, but is known as the *Dominion of New Zealand*.

Several short lines of railway connect the settled interior with the seaports; roads and stage lines extend to the more distant districts; and steamers ply around the coasts and to distant countries. There are four cities of nearly the same size, the smallest of which is WELLINGTON, the capital, and the largest, AUCKLAND. Find the other two on the map (Fig. 634).

4. Commerce and chief cities

3. THE EAST INDIES

Between Asia and Australia are hundreds of islands, some very large, others so small that they find no place on our map. This group of islands, or archipelago, known as the East Indies, has animals, plants, and people similar to those of Asia. New Guinea, however, which is nearest to Australia, resembles that continent rather than Asia.

1. Divisions among them

While the islands farther west are overrun with Malays from Asia, the natives of New Guinea are like the native Australians. The animal life also resembles that of Australia. It is believed, therefore, that New Guinea and Australia were once connected. For these reasons New Guinea is usually considered a part of Australia, while the islands west and northwest are classed with Asia.

The *Philippine Islands*, which belong to the United States, are really a northern extension of the East Indies. What can you say about them (p 246)?

It was the East Indies, as well as India and the Malay Peninsula, that Columbus was trying to reach. Their products are so valuable that the European nations have eagerly taken possession of them. England, as usual, has a part. Point it out. This time, however, she has not obtained the lion's share. That belongs to the little country of Holland. Name the large islands that are controlled wholly, or in part, by the Dutch. What nations control the island of Timor? What three have possession of New Guinea?

2. Their ownership

The immense size of these islands is shown by the fact that Java has a greater area than New York State, while Sumatra is larger than California. Borneo, one of the largest islands in the world, is larger than all the New England and Middle Atlantic States together.

3. Their area

New Guinea, another one of the large islands of the world, has an area equal to Texas and Pennsylvania combined. The Dutch East Indies alone are fifty times as large as The Netherlands, and have seven times as many inhabitants, or nearly half as many as the United States.

All of the larger islands are mountainous; in fact they are parts of mountain ranges rising out of the sea. Among them are many active volcanoes, some of which have had terribly destructive eruptions. Many of the smaller islands are merely coral reefs slightly raised above the ocean.

4. Their surface and climate

Lying so near the equator, the islands all have a tropical temperature and heavy rainfall. The dampness and heat together make them in some parts very

unhealthful. Because of the climate, and of the mountains and the dense jungles, there are large areas which have never been explored.

5. The products

The forests supply valuable woods and gums, including rubber and camphor. Large areas, especially in Java, are highly cultivated and produce quantities of rice, sugar cane, and coffee. In the production of the last two articles, Java is one of the leading countries of the world. Other products are tea, indigo, tobacco, cotton, and grains. Among the noted products of the East Indies are spices, such as pepper, cloves, and nutmegs; in fact, one of the island groups is known as the Spice Islands. What is its other name? There are also valuable minerals, including tin, gold, and precious stones; and in the tropical sea beautiful pearl shells are found.

Fig. 647. — New Guinea houses built in trees.

The largest city among all the islands in this region is Manila, in the Philippines; and next in size is Batavia, which is the center of the colonial government of the Dutch.

4. Islands of the Pacific

The map (Fig. 634) shows the western Pacific dotted with island groups; but these islands are all very small. What names among them have you heard before? Name and locate

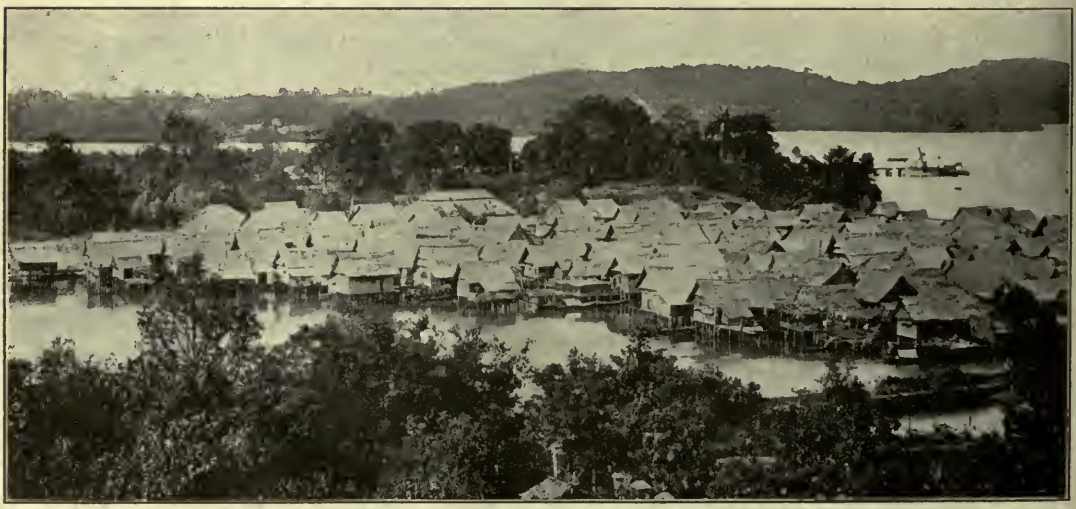


Fig. 648. — A Malay village built on piles in the water.

those that belong to the United States. All together, these thousands of islands have a population of less than a million persons.

The "high," or volcanic islands, like Fiji and New Caledonia, have peaks which rise several thousand feet. On these islands there are sugar and coffee plantations, as in Hawaii, while tropical fruits, such as bananas and pineapples, are raised in large quantities.

On the "low," or coral islands, on the other hand, the cocoanut palm is the mainstay of human life, supplying food, clothing, shelter, boats, and many utensils. Copra, the main export from Samoa, and from many other Pacific islands, is the dried meat of the cocoanut. It is of value for food, and for oil.

Fig. 649. — A native of Fiji Islands.

Review Questions

1. Locate and state the area of Australia. 2. Who owns Australia, and how is it governed? 3. What can you tell about the native plants? 4. About the native animals? 5. State some facts about the Bushmen. 6. What use was first made of Australia? 7. What is the population? 8. In what part of Australia do the inhabitants live? 9. State the main reasons why they live in that section. 10. Describe the coast. 11. State important facts about the sheep industry. 12. What other animals and animal products are there? 13. What are the agricultural products? 14. How do they change from north to south? 15. What can you tell about the minerals? 16. What is the condition of manufacturing? 17. Name and locate the principal cities. 18. Which of these are capitals, and of which division of the Commonwealth? 19. What are the surface features and climate of New Zealand? 20. What about the native inhabitants? 21. The industries and government? 22. Name and locate the chief cities. 23. Tell about the East Indies; divisions among them; government; area; surface and climate; products and chief city. 24. How does New Guinea differ from the East Indies? 25. What can you tell about other islands of the Pacific?

General Review Questions and comparisons

1. Australia resembles South Africa in its surface, climate, occupation, and products. Show how this is true. 2. Australia also resembles the western part of the United States in climate, in occupations and products, and in the order of development of her resources. Show how this is true, also. 3. What other countries, besides Australia, are especially noted for cattle and sheep? 4. For gold mining? 5. In what respects does southern South America (Chile and Argentina) resemble Australia? 6. What part of Australia has the same latitude, in the southern hemisphere, that southern Florida has in the northern? 7. Name and locate the principal desert regions on the earth. 8. Which of our states most nearly equals New Zealand in area? 9. What peninsula of Europe resembles New Zealand in shape? How do the two countries compare in area? In population?

Suggestions

1. If it were within your power, how would you arrange the highlands of Australia so as to secure the most even distribution of rain? 2. Estimate the greatest length of New Zealand. Compare it with a line extending from New Orleans northward. 3. Estimate the distance from Batavia to Manila. 4. Write your impression of the climate of Melbourne in January; in July. 5. Read Whittier's poem on the Palm Tree. 6. Learn something about the work of missionaries in the small Pacific islands. 7. Find out about the trouble caused by rabbits that were imported into Australia. 8. By what routes can you go from New York City to Australia? Through what waters? Which would be the shortest? About how many miles shorter? 9. Make a sketch map of Australia, putting in the principal mountains, rivers, and cities. 10. Read in Tarr's "Elementary Geology" (pp. 251–256) about the origin of atolls.

PART VIII

REVIEW OF UNITED STATES AND COMPARISONS WITH OTHER COUNTRIES

The Great Powers of the world, and their forms of government

We have seen that there are six nations of Europe that are called Great Powers, or World Powers. Name each of them (p. 337). The United States makes a seventh World Power, and Japan an eighth. Give the principal boundaries of each. Which two have a republican form of government? Which one is an absolute monarchy (p. 382)? What form of government have the other five? Each of the other nations on the earth is called a "Minor" or Lesser Power, being much weaker than any one of the eight World Powers.

Continents and zone to which the World Powers belong

On what continent is each of the eight World Powers located? What continents, therefore, contain no Great Powers?

In what zone does the United States lie? In what zone is the main portion of the other World Powers? Can you give any reasons why the chief nations of the earth are found in the temperate zone?

The greatest of these eight Powers, in area, is the British Empire, as seen in Figure 650. What is the rank in area of each of the others?

United States compared in area and population with other Great Powers

In Figure 651 the British Empire is seen to have also

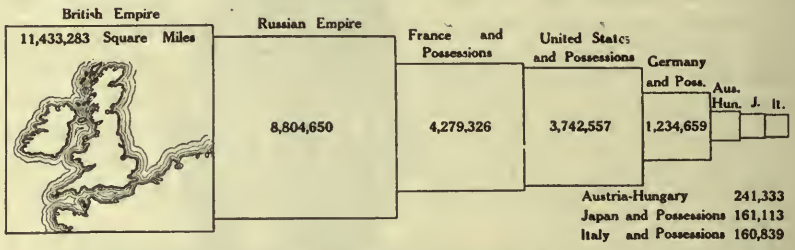


FIG. 650. — The areas controlled by the eight World Powers.

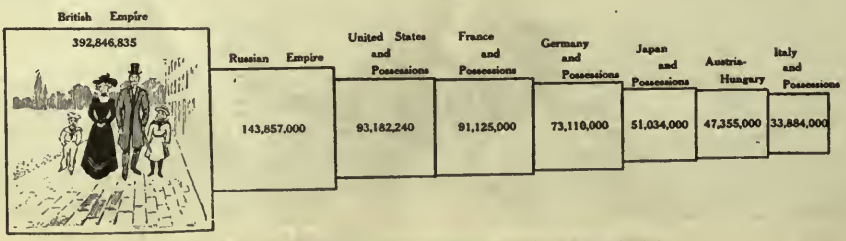


FIG. 651. — Population of the eight World Powers (1906).


POSSESSIONS OF THE
LEADING NATIONS OF THE WORLD
United States
British Empire
Germany
France
Russian Empire
ARCTIC OCEAN
ARCTIC CIRCLE
GREENLAND
ICELAND
SPITZBERGEN
FRANZ JOSEF LAND
NOVA ZEMBLA
NEW SIBERIA
Baffin Bay
Davis Strait
Hudson Bay
ALASKA
Bering Strait
Bering Sea
DOMINION OF CANADA
NORTH AMERICA
Montreal
NEWFOUNDLAND
UNITED STATES
San Francisco
New York
Gulf of Mexico
Mexico
Panama
Bogota
Quito
GUIANA
Lima
La Paz
SOUTH AMERICA
Pernambuco
Rio de Janeiro
Valparaiso
Buenos Aires
FALKLAND IS.
SOUTH GEORGIA
ATLANTIC OCEAN
EQUATOR
BRITISH ISLES
London
FRANCE
Paris
Berlin
EUROPE
St. Petersburg
RUSSIAN EMPIRE
ASIA
Gibraltar
ALGERIA
TUNIS
MALTA
CYPRUS
Suez
Cairo
EGYPT
SUDAN
AFRICA
Cape Town
MADAGASCAR
INDIAN OCEAN
Bombay
Calcutta
INDIA
CEYLON
Singapore
Peking
CHINESE EMPIRE
JAPAN
Tokio
PHILIPPINE IS.
PACIFIC OCEAN
NEW GUINEA
AUSTRALIA
Sydney
Melbourne
TASMANIA
NEW ZEALAND
PACIFIC OCEAN
HAWAIIAN IS.
MIDWAY I.
EASTER I.
Scale along the Equator
0 1000 2000 3000 4000 5000
Statute Miles
WILLIAMS ENGRAVING CO., N.Y.
Longitude West from Greenwich
Longitude East from Greenwich

FIG. 652.

the largest population of the eight. What is the rank of each of the others in population? What is the rank of our country in area and in population compared with the other World Powers?

The Power that has the most important foreign possessions is the British Empire.

Dependencies of the Great Powers

In Figure 476 point out the principal foreign possessions of the British. Can you account in any way for the fact that the British have control over so much of the earth? Point out the foreign possessions of the United States, (Fig. 487). Of Russia; Germany; France (Fig. 652).

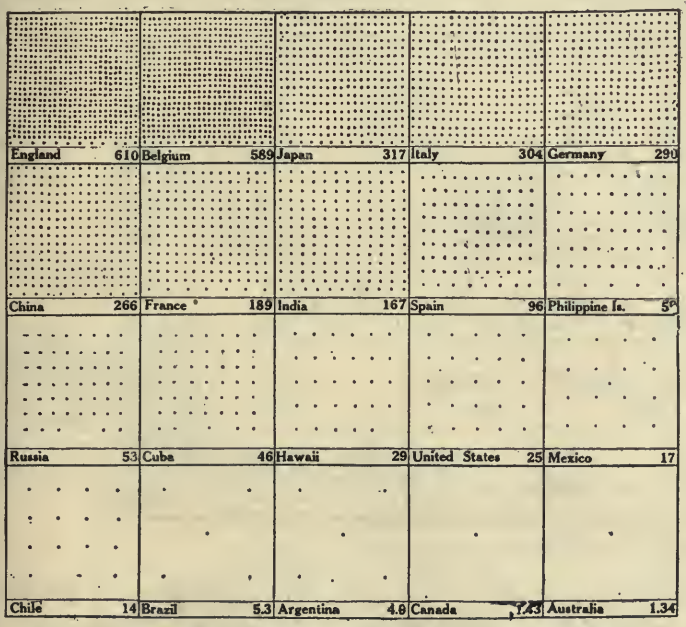


FIG. 653. — Density of population of some of the countries of the world.

It should be remembered that the eight World Powers mentioned are not the eight *largest* nations of the earth. They are simply the eight *strongest* nations. China, for instance, is much larger both in area and population than most of the eight. Yet it is a backward nation, for reasons that we have already studied. What are they (p. 427)? China, however, is a very promising nation for the future. Why (p. 428)? What do you know about its occupations (pp. 429–431)?

Other large and promising countries of the world

Argentina is the most promising country in South America. What can you tell about it (p. 316)? What other two nations of that continent might be compared with Argentina in importance (pp. 317, 326)? Tell the principal facts about each. How does Brazil compare with the Great Powers in area? (See Appendix.)

About one person in eight now living in the United States came here from some other land. Figure 458 shows which countries have been sending us the greatest number. Which ranks second in this respect? Can you name other countries not named in this diagram that have sent us immigrants? Which of the Great Powers has been sending us the most immigrants? Which have sent very few?

Immigrants to the United States

Figure 653 shows the *density of population*, or the number of people to the square mile, in some of the countries in the world. From this it will be seen that the United States is very thinly settled, compared with many countries. Compare the United States

Density of population in several countries

in this regard with Belgium, England, Cuba, Mexico, and Canada.

Name and locate the principal mountain systems in the United States.

Surface features

Describe the drainage of the United States. Name and locate our principal rivers. Which continent has its lofty mountains arranged most nearly like those of North America? Show this. How does the arrangement of mountains in North America compare with that in Europe? Compare the countries in Europe having most nearly the same latitude. Why the difference (pp. 334, 368)?

Tell about the prevailing winds and the rainfall in western United States (p. 294); the cyclonic storms and their effects (p. 297); the prevailing winds of Europe (p. 334); the rainfall there, with reasons (p. 334). In what respects are North America and Europe alike in regard to winds and rain?

In spite of the fact that some nations

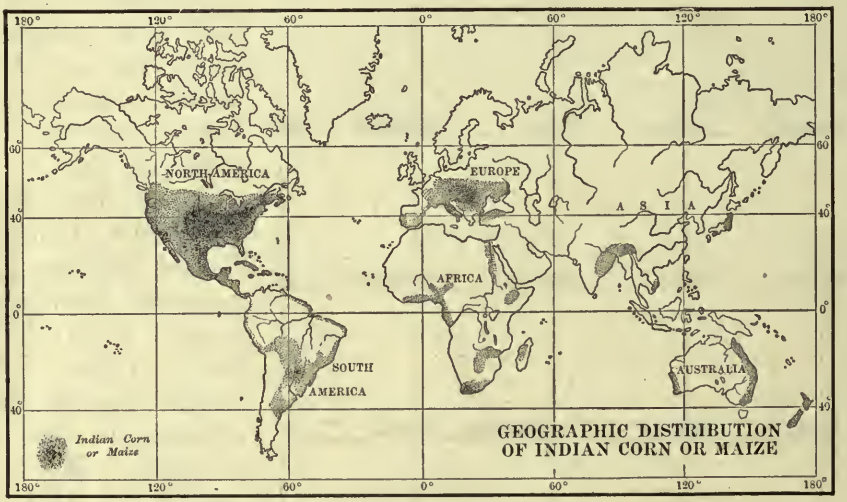


FIG. 654. — Corn sections of the world.

surface of the United States with that of European Russia (p. 382); of Brazil (p. 317); of China (p. 429).

What is the latitude of the northern boundary of the United States? Of the southern? Compare the latitude of our country with that of the British Isles (Fig. 459); with that of Germany, Italy, Egypt, India, China, Argentina, Australia.

Climate

How do ocean currents affect the temperature of the eastern part of our country? Of the western part (p. 303)? Compare our temperature with that of

are larger and more densely settled, the United States leads the world in many very important respects, and approaches leadership in several others. Figure 654 shows that no nation is a close rival to us in the production of Indian *corn*. What countries, however, raise large quantities of it? Why is no Indian corn raised in the British Isles (p. 340)?

Raw food products

1. Corn

Wheat is more widely cultivated than corn (Fig. 655). Yet we are far in the lead in the production of that grain. Point out

2. Wheat

(Fig. 655) the leading wheat fields of the world. Which sections are important for both wheat and corn? On which side of the Atlantic is wheat raised farthest north? Why (p. 334)? Name in order the eight countries that lead in the production of this grain (Fig. 656).

Note what sections of the world raise

FIG. 655. — Wheat sections of the world.

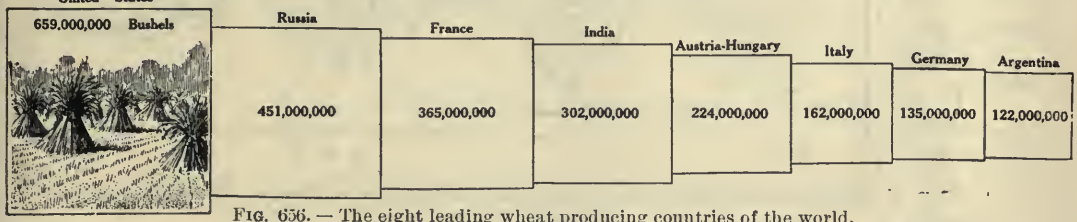


FIG. 656. — The eight leading wheat producing countries of the world.

FIG. 657. — Sugar cane and sugar beet sections of the world.

sugar cane and *sugar beets* (Fig. 657). Name countries and islands engaged in these industries. Is it mainly the sugar beet or sugar cane that is raised in Europe? Why (p. 153)? What is our rank in the raising of sugar cane and sugar beets (Fig. 658)? Name the six regions that lead in this kind of agriculture.

3. Sugar cane and sugar beets

Figure 659 shows the principal *rice* sections of the world. What continent grows by far the largest amount? What countries in that continent? What other parts of the world produce much of it? What parts of the United States? What kind of climate does it require, and how is it raised (p. 154)?

4. Rice

Figure 660 shows that coffee is not grown within our states, although in almost every house-

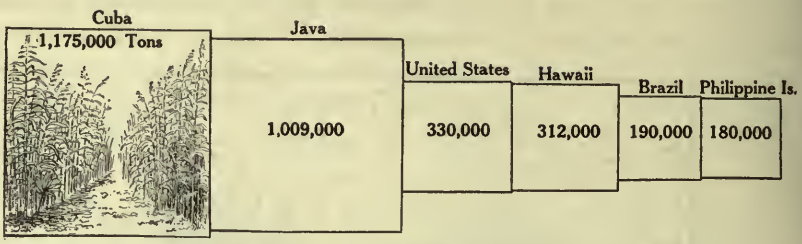


FIG. 658. — The six countries producing the most sugar cane and sugar beets.

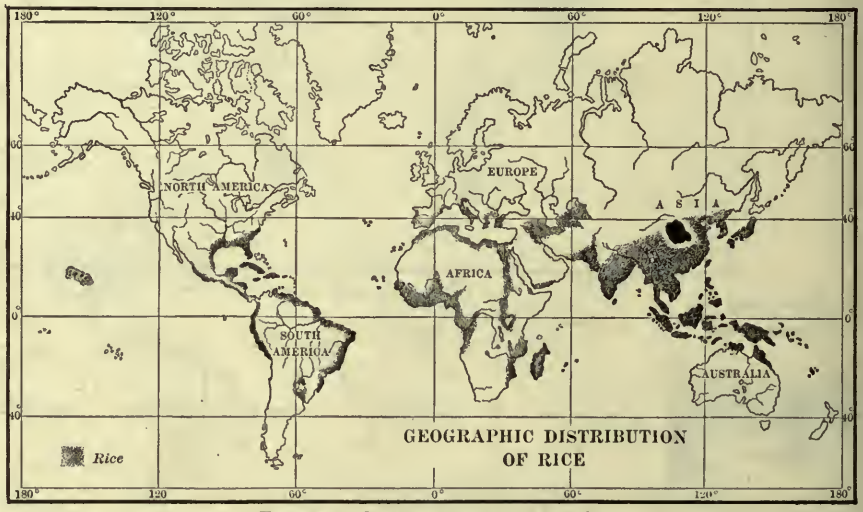


FIG. 659. — Rice sections of the world.

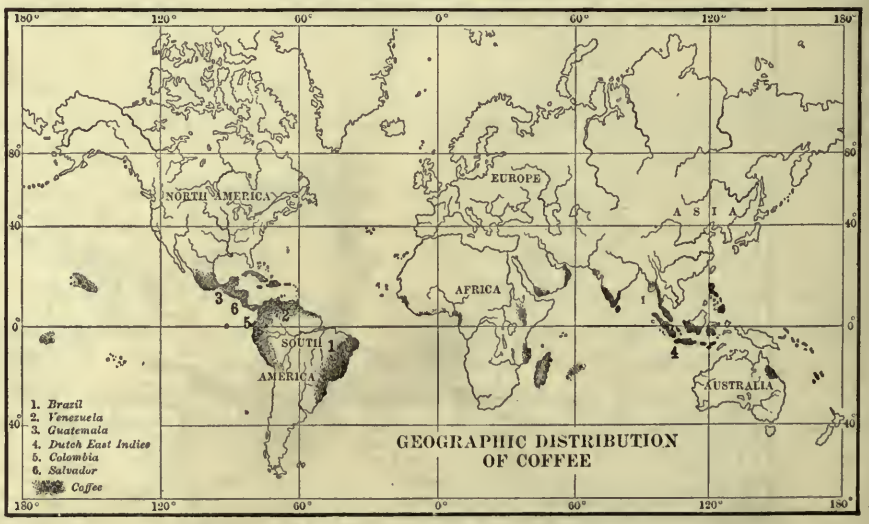


FIG. 660. — Coffee-producing sections of the world.

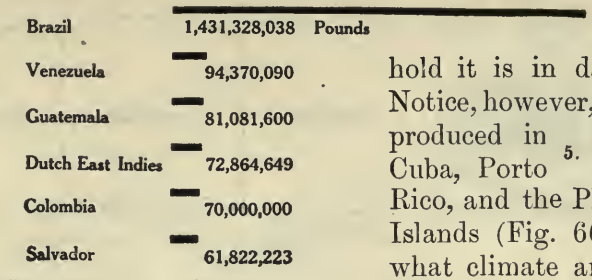


FIG. 661. — Leading coffee-producing countries.

hold it is in daily use. Notice, however, that it is produced in Cuba, Porto Rico, and the Philippine Islands (Fig. 660). To what climate and countries is it confined? State the rank of the principal coffee-producing sections, and compare their output (Fig. 661).

5. Coffee

Our *tea* (Fig. 662), also, comes almost entirely from other countries. Mainly from what parts of the world? Name the principal countries and islands.

6. Tea

FIG. 662. — Tea-producing sections of the world.

Note the distribution of *cattle* and *sheep* (Fig. 663). What countries are included? Recall some facts concerning sheep raising in Australia, Argentina, and the

7. Cattle and sheep

FIG. 663. — Cattle and sheep sections of the world.

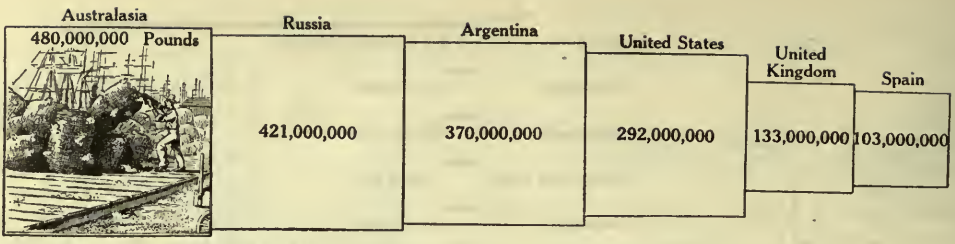


FIG. 664. — The six leading wool-producing countries.

Raw textile products

1. Wool

United States. Why are cattle and sheep raised in the same regions?

Figure 664 shows the six leading *wool*-producing countries. Name them. What is the rank of the United States?

2. Cotton

the principal sections (Fig. 665). Within what parallels of latitude are they found? Name the eight countries that lead in its production (Fig. 666). How much greater is the output of the United States than that of the seven other countries together?

FIG. 665. — The cotton sections of the world.

Cotton grows only in warm climates, so that fewer countries raise it. Name

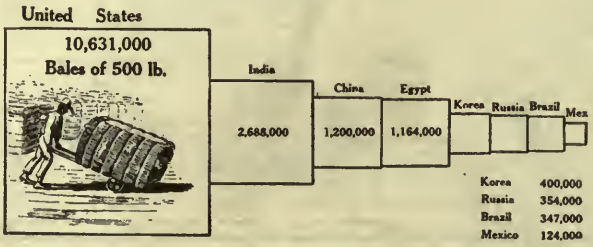


FIG. 666. — The eight chief cotton-producing countries of the world.

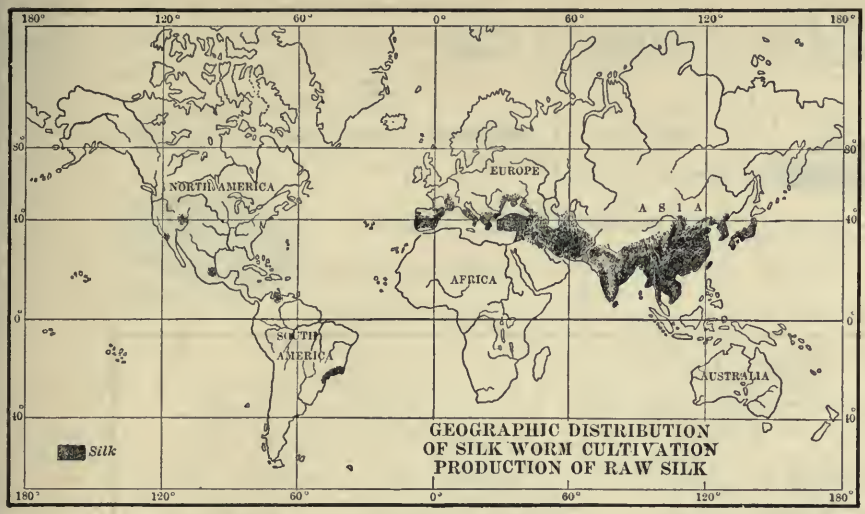


FIG. 667. — The raw silk-producing sections of the world.

FIG. 668. — The six leading raw silk-producing countries.

Figure 667 shows the sections that produce silk. What are their names?

What about this industry in the United States? Name in order of amounts produced, the countries that produce raw silk (Fig. 668). Tell how the work is carried on (p. 363). **3. Raw silk**

The great importance of *coal* and *iron* for use in manufacturing has often been pointed out. Figure 669 shows that the *coal fields* are very limited. What countries have little or no coal? Name the leading coal-producing sections, and state the rank of the United States in the production of this mineral (Fig. 670). **Mineral products** **1. Coal**

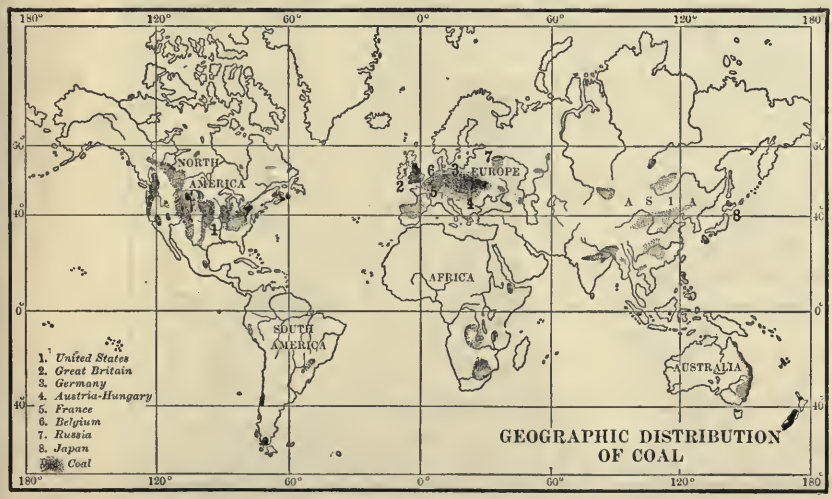


FIG. 669. — Leading coal-producing sections of the world.

The United States leads the world in the production of *petroleum*, or mineral oil (Fig. 671). The second most im- **2. Petroleum**

FIG. 670. — The eight leading coal-producing countries of the world

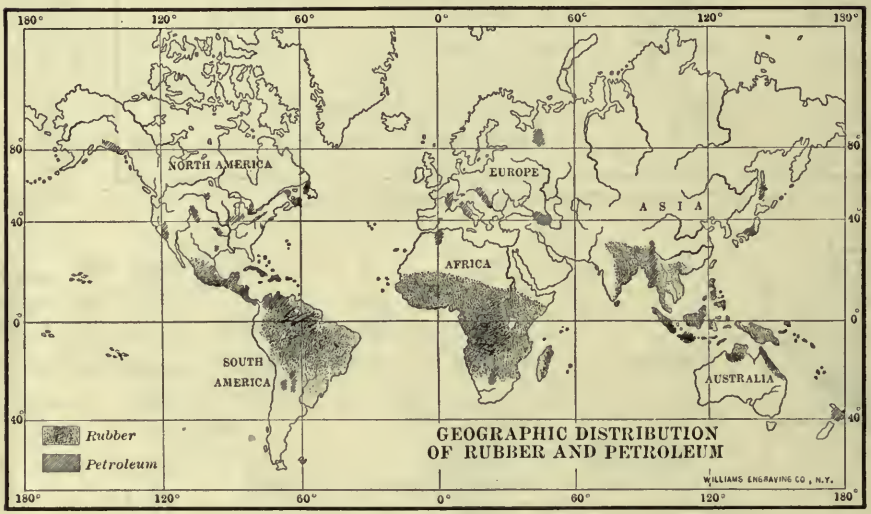


FIG. 671. — The leading petroleum-producing sections of the world.

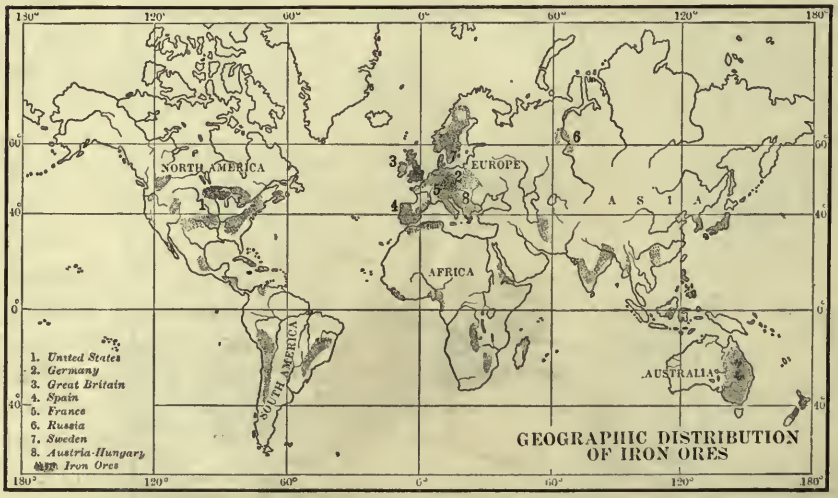


FIG. 672. — Leading sections of the world that produce iron ore.

portant district is in Russia, near the Caspian Sea. Other districts produce little petroleum. What are its uses?

of countries as manufacturing nations (Fig 679)?

Tell about the distribution of *gold*

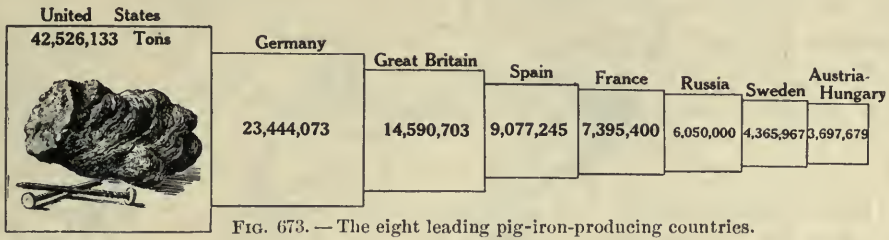


FIG. 673. — The eight leading pig-iron-producing countries.

3. Iron ore and pig iron

Is *iron ore* more or less widely distributed than coal (Figs. 672; 669)? How does the United States rank in the output of this mineral (Fig. 674), and give our rank in the production of that metal (Fig. 675).

4. The precious metals

Where are the principal *silver*-mining

FIG. 674. — Leading gold-producing sections of the world.

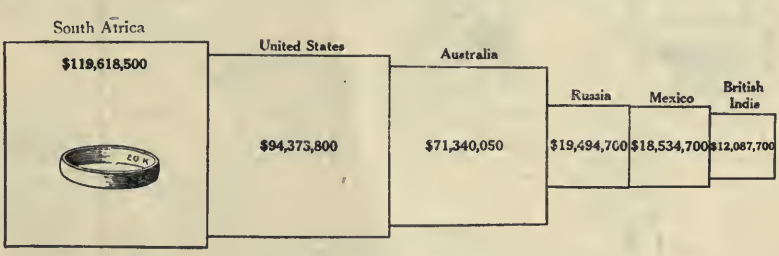


FIG. 675. — The six leading gold-producing countries.

(Fig. 673)? How does the output of coal and iron correspond to the importance

sections (Fig. 676)? How does the United States compare with other coun-

tries in this product (Fig. 677)? Notice to what extent the world is indebted to the New World for silver. How does the value of the total silver production compare with that of gold in the six leading regions for each?

FIG. 676. — Leading silver-producing sections of the world.

FIG. 677. — The six leading silver-producing countries.

5. Other mineral products

The United States produces great quantities of other minerals. Name some of them (pp. 122, 160, 161, 188, 189). In the production of some, such as copper, and natural gas, our country also leads.

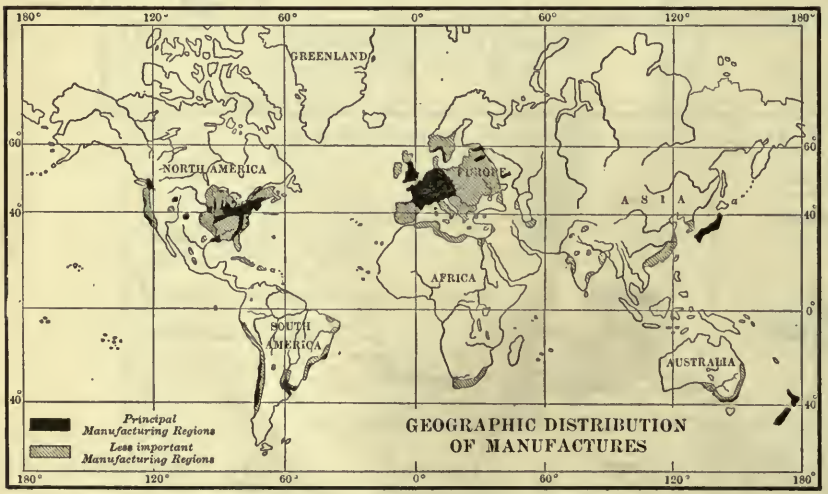


FIG. 678. — Manufacturing sections of the world.

Manufacturing

According to Figure 678, what two continents lead in *manufacturing?* What other, smaller sections are active in this industry? Taking into account the size of our country, the abundance of our raw materials, and the energy and

intelligence of our people, it is not surprising that we surpass all other countries in such work (Fig. 679).

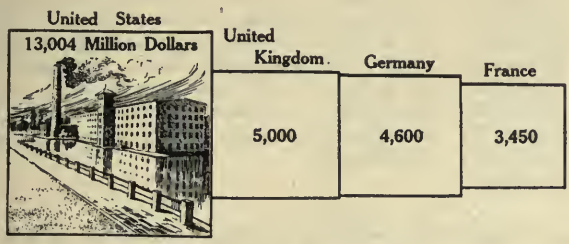


FIG. 679. — The four leading manufacturing countries.

State the rank of other leading nations in this occupation.

Into what articles is corn manufactured in the United States (p. 178)? Answer the same question about wheat (p. 189). What are the leading centers for the preparation of meats in the United States (pp. 193, 199)? What countries in South America are extensively engaged in this industry (pp. 316 and 317)?

In what parts of the United States is most cotton manufacturing carried on (pp. 131, 161)? Why there? What other countries have much cotton manufacturing? What countries of the world are noted for the manufacture of pig iron and other iron and steel goods? Name great centers for this industry in our own country; in foreign countries.

In provisions for transportation by rail, also, the United States takes the leading place. It has a far greater number of miles of railway than any other nation (Fig. 680); but several small European nations have a greater number of miles in proportion to their area.

Commerce
1. Conveniences for transportation

The United States ranks second in provisions for *transportation by water* (Fig. 681). State the rank of the six chief countries in total length of *railways*, and in *merchant marine*. Give reasons why the United Kingdom should lead in merchant marine (p. 348). Why should Norway be of importance in this respect (p. 390)?

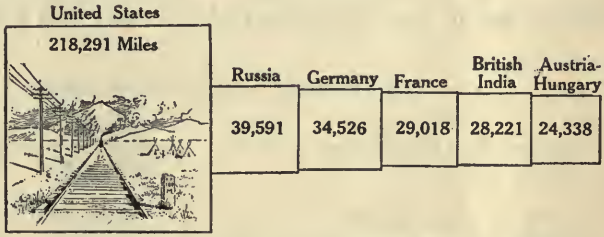


FIG. 680. — The six countries having greatest length of railways.

We produce many more raw products and manufacture many more goods, than we can use. These we send abroad, or *export* to other countries, and for that reason they are called our *exports*. Our ten leading exports, named in order of value, together with the principal countries to which the goods are sent, are shown on p. 488.

2. Our trade with foreign countries
(1) *Our exports*

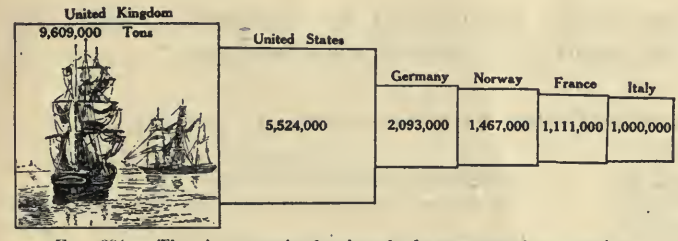


FIG. 681. — The six countries having the largest merchant marine.

Name from memory our principal exports in the order of their value.

While we *sell* an enormous quantity

Table of Chief Exports of the United States

Articles	Value in 1909	Principal countries to which they are sent
1. Cotton (mainly manufactured)	$449,269,231	Gt. Britain, Germany, France, Japan.
2. Meat and dairy products	150,496,717	Gt. Britain, Germany, France, Belgium.
3. Breadstuffs (wheat, corn, flour, etc.)	145,244,038	Gt. Britain, Germany, Netherlands, Belgium.
4. Iron and steel, and manufactures of	144,951,357	Gt. Britain, Canada, Germany, Mexico.
5. Mineral oils (crude and refined)	105,999,637	Gt. Britain, Germany, Netherlands, Belgium.
6. Copper (manufactures of)	85,290,186	Gt. Britain, Netherlands, France, Germany.
7. Wood, and manufactures of	67,867,432	Gt. Britain, Canada, Germany, W. Indies.
8. Leather, and manufactures of	42,974,795	Gt. Britain, Australasia, Canada.
9. Tobacco	35,604,517	Gt. Britain, Germany, Italy, France.
10. Animals (mainly cattle)	22,645,438	Gt. Britain.
Total value of exports	$1,250,339,348	

(2) *Our imports*

of goods to other countries, we must also *buy* many other things. One of these is coffee, as shown in Figure 660; we produce far less sugar each year than we consume; we depend wholly on foreign nations for raw silk; our tea comes almost entirely from abroad (Fig. 662); and while much rice is produced in our Southern States, a large amount must be purchased. These goods, and many others, have to be brought to our shores, or *imported*, from other countries, and for that reason they are called our *imports*.

Our ten leading imports, named in order of value, together with the principal countries from which they come, are as follows: —

Table of Chief Imports of the United States

Articles	Value in 1909	Principal countries from which they come
1. Silk, and manufactures of	$110,622,168	Japan, France, China, Italy.
2. Sugar	96,554,998	E. Ind., Hawaiian Ids., Cuba, Germany (beet sugar).
3. Fiber, and manufactures of	79,182,266	Mexico, Philippines, E. Indies.
4. Coffee	79,112,129	Brazil, Cent. America, E. Indies, Mexico.
5. Hides and skins	78,489,838	E. Indies, S. America, Gt. Britain, France.
6. Chemicals, drugs, etc.	78,379,634	Germany, E. Indies, Gt. Britain.
7. Cotton (mainly manufactures of)	75,673,088	Gt. Britain, Germany, Switzerland, France.
8. Rubber and rubber goods	64,707,856	Brazil, Gt. Britain.
9. Wool, and manufactures of	62,274,454	Gt. Britain, Germany, France, S. America.
10. Fruits and nuts	31,110,683	Italy, Cent. America, W. Indies.
Total value of imports	$757,108,114	

Compare the value and nature of our exports and imports. How is the result encouraging in comparison with the statistics of other countries?

The Ten Leading Countries with which we Trade

Countries		Value in 1909	Kinds of Goods
1. British Isles	Exp.	$514,627,365	Provisions, breadstuffs, raw cotton.
	Imp.	208,612,758	Cotton goods, raw wool, tin, jewelry, rubber goods.
	Total	723,240,123	
2. Germany	Exp.	235,324,140	Raw cotton, breadstuffs, provisions.
	Imp.	143,525,828	Beet sugar, chemicals and drugs, cotton goods, silk goods.
	Total	378,849,968	
3. France	Exp.	108,764,262	Raw cotton, copper, mineral oil.
	Imp.	108,387,337	Silk goods, hides, jewelry, cotton goods.
	Total	217,151,599	

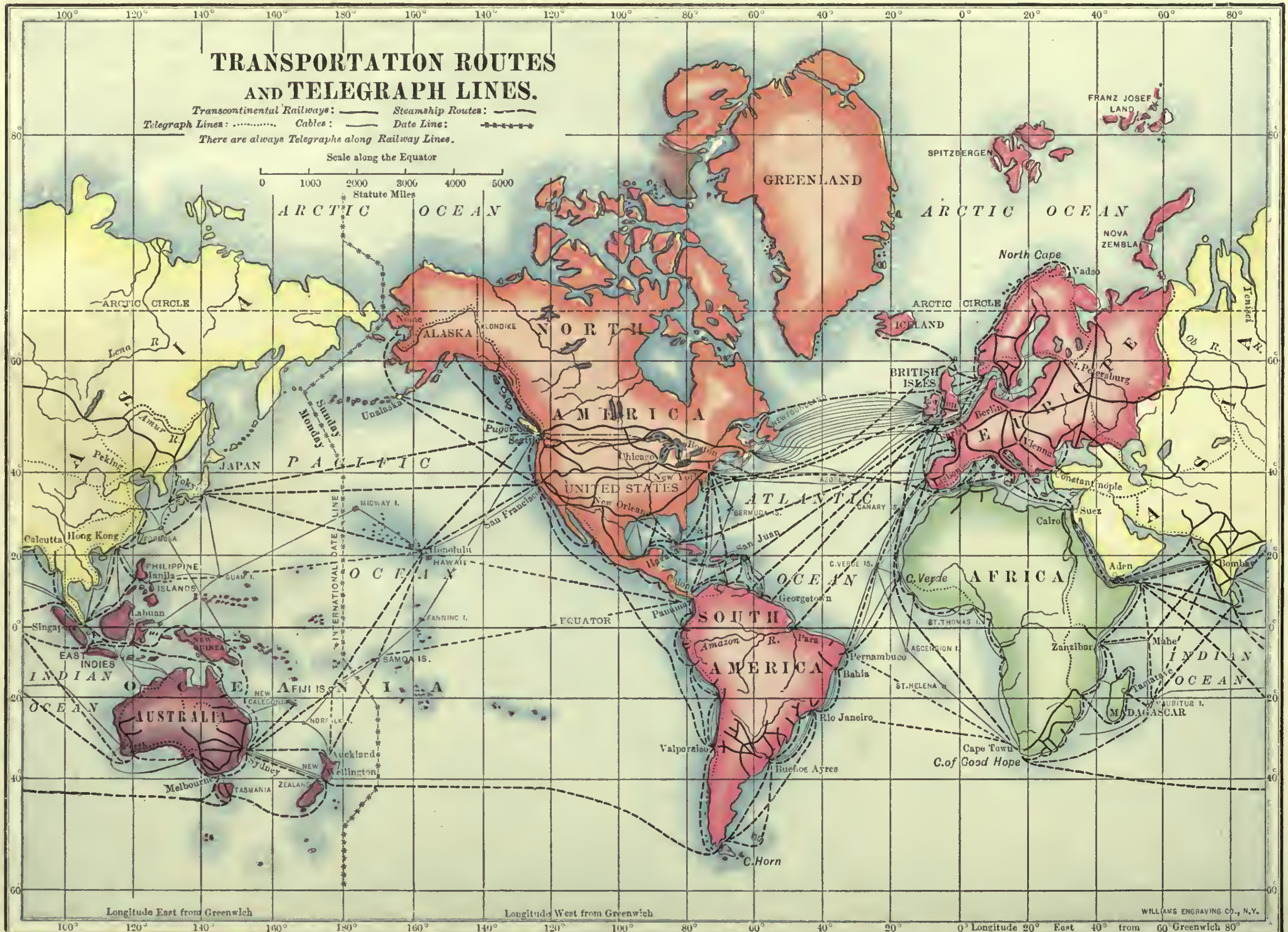

TRANSPORTATION ROUTES
AND TELEGRAPH LINES.
Transcontinental Railways:
Steamship Routes:
Telegraph Lines:
Cables:
Date Line:
There are always Telegraphs along Railway Lines.
Scale along the Equator
0 1000 2000 3000 4000 5000
Statute Miles
ARCTIC OCEAN
PACIFIC OCEAN
ATLANTIC OCEAN
INDIAN OCEAN
ARCTIC CIRCLE
EQUATOR
INTERNATIONAL DATE LINE
Sunday
Monday
GREENLAND
NORTH AMERICA
SOUTH AMERICA
UNITED STATES
ALASKA
KLONDIKE
EUROPE
ASIA
AFRICA
AUSTRALIA
OCEANIA
BRITISH ISLES
ICELAND
SPITZBERGEN
FRANZ JOSEF LAND
NOVA ZEMBLA
North Cape
Vadso
St. Petersburg
Berlin
Vienna
Paris
London
Lisbon
Constantinople
Suez
Cairo
Aden
Bombay
Calcutta
Hong Kong
Peking
Tokyo
JAPAN
FORMOSA
PHILIPPINE ISLANDS
Manila
Labuan
Singapore
EAST INDIES
NEW GUINEA
NEW CALEDONIA
NORFOLK I.
NEW ZEALAND
Auckland
Wellington
Sydney
Melbourne
TASMANIA
FIJI IS.
SAMOA IS.
FANNING I.
HAWAII
Honolulu
MIDWAY I.
GUAM I.
Unalaska
Nome
Puget Sd.
Seattle
San Francisco
Chicago
New York
New Orleans
Havana
San Juan
Colon
Panama
BERMUDA IS.
AZORES
CANARY IS.
C. VERDE IS.
C. Verde
NEWFOUNDLAND
Georgetown
Para
Amazon R.
Pernambuco
Bahia
Rio Janeiro
Buenos Ayres
Valparaiso
C. Horn
ST. THOMAS I.
ASCENSION I.
ST. HELENA
Cape Town
C. of Good Hope
Zanzibar
Mahe
Tamatave
MAURITUS I.
MADAGASCAR
Lena R.
Amur R.
Ob R.
Yenisei R.
Longitude East from Greenwich
Longitude West from Greenwich
0° Longitude 20° East 40° from 60 Greenwich 80°
WILLIAMS ENGRAVING CO., N.Y.

FIG. 682.

THE TEN LEADING COUNTRIES WITH WHICH WE TRADE — Continued

Countries		Value in 1909	Kinds of Goods
4. Canada (with Newfoundland and Labrador)	Exp.	167,388,299	Coal, breadstuffs, cotton, and manufactures of.
	Imp.	80,479,266	Lumber, coal, hides.
	Total	247,867,565	
5. Netherlands	Exp.	95,012,366	Breadstuffs, provisions, copper, mineral oil.
	Imp.	26,086,836	Jewelry, tin.
	Total	121,099,202	
6. West Indies	Exp.	64,886,401	Provisions, breadstuffs, animals.
	Imp.	21,833,318	Sugar, fruits, cocoa.
	Total	86,719,719	
7. East Indies	Exp.	13,493,106	Mineral oil, cotton goods.
	Imp.	86,875,495	Sugar, hides, tin.
	Total	100,368,601	
8. Brazil	Exp.	17,527,692	Breadstuffs, mineral oil, provisions.
	Imp.	98,053,229	Coffee, rubber, sugar.
	Total	115,580,921	
9. Mexico	Exp.	49,793,323	Coal, cotton goods, iron and steel manufactures.
	Imp.	47,712,214	Sisal grass, coffee, lead, hides.
	Total	97,505,537	
10. Japan	Exp.	26,691,613	Manufactured cotton, mineral oil, iron and steel manufactures.
	Imp.	70,392,722	Silk, tea.
	Total	97,084,322	

More than one third of all our foreign trade is, as you can see, with the British Isles.

Figure 682 shows the main ocean routes followed by vessels engaged in the commerce between nations. Note which are the most important. What countries do they connect? Trace other routes across the Atlantic, and tell what countries they connect. Name, if you can, some goods that are carried by each route. Do the same for the Pacific.

(3) *Principal transportation routes on the oceans*

Our many exports and imports show how dependent we are upon other countries. We are wonderfully favored in the abundance of our resources. Yet it would be of no use to produce so many things, if foreign countries did not buy some of them.

(4) *The dependence of nations upon one another*

Again, although we have so many products, there are still many things that we need from other lands. It is true that we probably could depend upon ourselves for all that we want better than any other nation. The English, for instance, would starve within a few weeks, if they imported no food there. Yet note the amount of our imports. How do they compare, in value, with our exports? Thus, in spite of our great resources, we are very dependent upon other countries.

Owing to our trade relations with the United Kingdom, what hardships would probably be brought upon the British, if they entered upon a war with us? How might the Germans suffer, if they were at war with us? How might the French suffer? On the other hand, what hardships would come to us in each case?

All the preceding facts prepare us for Figure 683, which shows that the United States is the *wealthiest nation* on the face of the earth. Compare our wealth with that of other leading countries.

Wealth of nations

The figures and diagrams that you have studied show that several European countries compete with the United States in the *world's trade*. Give examples.

Reasons why we promise great progress in the future

So far as the future is concerned, however, several important facts are in our favor. In the

1 and 2. Our youthfulness and abundance of room

first place, we are still in our youth as a people, while some of the leading nations of Europe have perhaps reached the height of their power. In the second place, the territory of most of those countries is densely settled, as shown in Figure 653. Note the number of inhabitants to a square mile in Belgium, in Germany, and in France. When we contrast with these figures our average of only twenty-five persons per square mile, our possible future growth seems almost without limit. Immense tracts of land, that in Europe would be carefully tilled, in our country are not even cleared for pasture. In no large section of the United States do we approach the careful tillage of the soil that is common in Belgium and some other European countries.

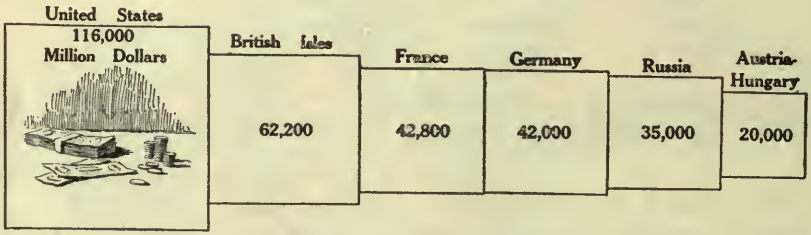


FIG. 683. — The six wealthiest nations in the world.

The varied climate and surface features of our vast country are also favorable to us; for they make a variety of products possible. Almost all farm products can easily be raised in the United States, and our wonderful mineral resources are, so far as we know, not equaled on any continent. It will therefore be seen that our natural resources, which have been so important in giving us our present position, promise equally well for the future.

3. Our variety of climate and surface features

The character of our people is another thing that must be considered in reckoning our future promise. The condition of China shows that resources alone will not make an energetic people and a great nation; for, in spite of the fact that the Chinese have been greatly favored in their resources, they have made very little use of them. Indeed, their customs have prevented progress (p. 427).

4. The character of our people

Our population has been made up, in large part, of those who had energy and ambition enough to migrate to a new land in the hope of bettering their condition. In their new home the opportunities have been so great, that they have been encouraged to work and to improve themselves. Conditions in the desert have produced the nomad, and the ease of life in the tropical forest, the shiftless savage. But the conditions in the United States have produced a people noted for its energy and enterprise. This result has been possible, however, largely because our nation is a mixture of peoples already gifted.

The statement of reasons for expecting great future progress in the United States would not be complete, if left here. There are two other factors of great importance; namely, education and government. Where

5 and 6. Our care for education, and our government

people are ignorant, and where rulers subject them to bad laws and heavy taxes, there is little chance of progress. It is those European countries in which there are the best opportunities for education and the greatest freedom, that have made the greatest advance.

No nation in the world pays more attention to education or guarantees its people a more active part in their government than the United States. These facts, even as much as the resources and the character of the people, help to explain our astonishing progress in the past, and to give reason for hope in the future.

Need of conserving our resources

Of one thing, however, there is need of greater care. Hitherto we have had such an abundance of resources that we have used them freely, and often carelessly. Thus, we have destroyed many of our forests; there has been much waste of coal and other minerals; and in many places the soil has been allowed to become unproductive. There is need of laws to prevent this, for a nation should not waste its resources any more than an individual. We have plenty for the future, but we should conserve it far more carefully in the future than in the past, else we shall exhaust even the vast resources of our country.

APPENDIX I

LATITUDE, LONGITUDE, AND STANDARD TIME[1]

1. Latitude and Longitude

In a study of geography, it is often necessary to locate places exactly. This is not so easy as it might seem. For instance, suppose we wish to state where London is situated; how would it be done? By taking a long time, it would be possible to describe the general location of this city; but some more accurate way must be found.

Need of some way of locating places exactly

The difficulty is much the same as that which arises in locating a place in a large city, where there are thousands of houses. No one person knows who lives in most of them, and if a stranger were looking for a friend, he might have much trouble in finding his house.

How houses are located in cities

A very simple means has been found for locating city houses. For example, a street running east and west may be selected to divide the city into two parts, as Washington Avenue does in Figure 684. Any place north of this street is spoken of as being on the *north side;* any place south of it as being on the *south side.* The streets north of this central street are numbered as North 1st, North 2d, North 3d, etc.; those to the south of it as South 1st, South 2d, South 3d, and so on. Then if a man says that he lives on North 4th Street, we know at once that he lives on the north side, and that his house is on the fourth street from this central one.

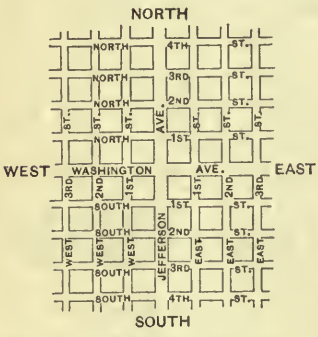


Fig. 684. — Map of a part of a city, to illustrate the need of naming streets.

But we need also to know on what *part* of North 4th Street this house is to be found. To answer that question, another street running north and south, and crossing the east and west ones, may be selected to divide the city into east and west parts. In Figure 684, Jefferson Avenue is such a street. The streets on the two sides of it are numbered as East 1st, East 2d, West 1st, West 2d, etc.

Then if a man lives on the corner of North 4th and East 3d streets, we know not only that his home is *north* of a certain line, but *east* of a certain other line. If the *blocks*, as the spaces between two streets are called, are always of the same length, it will be easy to tell the distance from each of the central streets to the house. Thus the house can be located *exactly.*

Such a plan is not necessary in small towns and villages, because the people there know one another, and are able to direct strangers easily. Few, if any, cities follow *exactly* the scheme here given; but many have plans somewhat similar to this. If you live in a city, you can tell just how houses are located there.

Places upon the earth are located in much the same manner as in the city just described. The *equator*, which extends around the earth midway between the poles, corresponds to the dividing street (Washington Avenue) that runs east and west. The distance between the equator and the poles, on either side, is divided

How places can be exactly located on the earth

[1] The topics in Appendix I and II do not form a necessary part of the subject as presented in this book; and they are topics of some difficulty. Yet some teachers will doubtless wish to introduce one or all of them in their classes at some stage in the study of Geography, and they are therefore included in Appendixes for the use of such classes.

into ninety parts (Fig. 685), corresponding, we might say, to the blocks in a city. The earth is so large, however, that these "blocks," or parts, are very much larger, each being about sixty-nine miles wide. That distance is called a *degree*, and the sign for degrees is a little circle (°) placed at the right of a figure. (For example, 60° means 60 degrees.)

1. How they can be located in a north and south direction

FIG. 685. — The globe, showing the two hemispheres and some of the circles of latitude.

Lines are drawn upon maps and globes to represent these degrees. The lines on a globe extend completely around it from east to west, and are therefore circles. The first circle north of the equator, marked 1°, is about sixty-nine miles from that dividing line; the one marked 2° is twice the distance, and so on. The north pole is 90° from the equator. The same plan is followed south of the equator; and the south pole is also 90° from the equator. Thus the distance from pole to pole is 180°.

All points on any one of these circles are equal distances from the equator, and from each of the other circles. That is, the circles are parallel with one another; and on that account they are called *parallels*.

If one finds that a certain place is on the 8th or the 50th, or some other circle north of the equator, he knows how many miles it is north of that dividing line; for every degree is about 69 miles. San Francisco, for example, is close to the 38th parallel; Chicago is close to the 42d; and St. Paul is on the 45th (Figs. 233 and 270). Knowing this, it is easy to see that Chicago is 4°, or about 276 miles, farther north than San Francisco. It is also easy to see that St. Paul is 3°, or over 200 miles farther north than Chicago.

Thus, by the help of the parallel lines one can find how far any place is north or south of the equator. Instead, however, of saying that places are so many degrees *north or south of the equator*, we usually say that they are in so many degrees *north or south latitude*. San Francisco, for instance, is near 38° *north latitude* (abbreviated *N. Lat.*). Both forms of statement are correct, but the latter is the shorter. *Latitude is nothing more than distance north or south of the equator, measured in degrees;* and the parallel lines are called *parallels of latitude*.

Of course there are no marks *upon the earth* to show where these circles run. They are drawn *on maps*, where they are of great use because they help to locate places.

Small maps and globes cannot well show the entire ninety parallels on each side of the equator. That would make too many lines. For this reason, only every fifth or tenth parallel is usually put on such maps. Examine some maps (such as Figs. 107, 134, 138, 144, 459, and 576), to see which ones are given. Near what parallel do you live?

As in the city, some means must also be found for locating places east and west; for two points might be in 10° north latitude and still be several thousand miles apart. Show that this is so.

2. How places can be located in an east and west direction

Imaginary lines are used for this purpose, as before; but this time they extend around the earth from pole to pole (Fig. 686). These lines, extending through both poles, are called *meridians*.

In a city it makes little difference what north and south street is chosen from which to number the others. It is necessary only that a certain one be *agreed upon*. The same is true of these meridians. No one is especially important, as is the equator among the parallels, and any one of them *might* be chosen to start from. Indeed, different nations have selected different circles from which to begin numbering. In France the meridian extending through Paris is chosen; in England that through Greenwich, near London; and in America the one passing through Washington is sometimes used.

It is, however, important that all people agree on some one meridian to start from, so that all maps may be made alike. On that account, many countries begin their numbering with the meridian which passes through Greenwich. The maps in this book follow that plan.

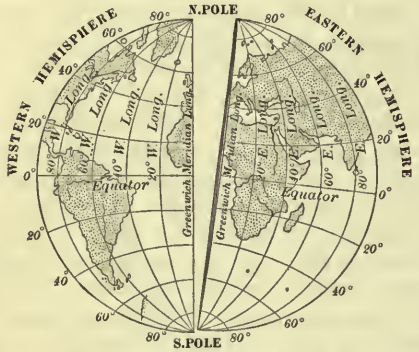


FIG. 686. — The earth, cut in halves along the Greenwich meridian, showing some of the meridians. The meridian 20° is usually considered the dividing line between the eastern and western hemispheres because it lies out in the Atlantic Ocean.

It is necessary in locating places on the earth to study the movements of the sun and the stars; and this is done in a building called an *observatory*, in which there are telescopes and other instruments. Since there is such an observatory at Greenwich, this seemed to the English people to be a fitting place from which to begin numbering the meridians.

Commencing with the meridian of Greenwich, we measure off degrees both east and west of it. On maps and globes these distances are represented by circles extending completely around the earth, through both poles. Thus there is a meridian 1° west, another 2°, a third 3°, etc. Going eastward, the meridians are numbered 1°, 2°, 3°, etc., in the same way. Any place on the 3d meridian *west* of Greenwich is 3° *west* of the principal meridian; if on the 60th meridian, it is 60° west.

Again, however, instead of saying that a place is so many degrees *east or west of the principal meridian*, we say it is in so many degrees *east or west longitude*. This is merely the shorter way of saying it. The place on the third meridian, just mentioned, is, therefore, in 3° west longitude, and the other place is in 60° west longitude. *Longitude is nothing more than distance east or west of the principal meridian, measured in degrees.*[1] The circles that form the meridians are also known as *circles of longitude*.

Any place on the 20th meridian *east* of Greenwhich is 20° *east longitude* (*E. Long.*). New York is in 74° W. Long., while San Francisco is in about 123° W. Long. What meridian passes near Chicago? Denver?

The distance around the earth from north to south, through both poles, is four times 90°, or 360° in all. The equator is likewise divided into 360 parts, or degrees. There are therefore 360 meridians, if they are drawn one degree apart. They are numbered up to 180° in both directions (Fig. 687). Thus, 180° E. Long. is the same as 180° W. Long.

FIG. 687. — A view looking down on the north pole, to show how the meridians come to a point at the north pole. Notice that if the 0° meridian were continued, it would unite with the meridian 180°.

The meridians are not parallel, like the circles of latitude. They are farthest apart at the equator, where the width of a degree of longitude is about 69 miles. But all the meridians come together at the poles, as you can see on a globe or on Figure 687. Therefore the width of a degree of longitude becomes smaller toward the poles.

Knowing the latitude and longitude of any place, it may, by the aid of a map, be as easily located as a house in a great city. For in-

[1] The ancients thought that the world extended farther in an east and west direction than in a north and south direction. Therefore they called the east and west, or *long* direction, *longitude*; the north and south direction, latitude (*latus* = broad).

stance, Denver is about 40° N. Lat. and 105° W. Long. It is therefore far to the north and west of New Orleans, which is about 30° N. Lat., and 90° W. Long. Find the latitude and the longitude of some of the large cities on the map (Fig. 138). Notice also that only every fifth meridian is marked on this map. Compare this with the map of the Northeastern States (Fig. 144). Since the latter map represents a smaller section, more meridians can be drawn upon it.

2. Standard Time

If you were to travel from New York to San Francisco, you would find on arriving there that your watch was three hours too fast. The reason is that the rotation of the earth is from west to east. This causes the sun's rays to fall upon the Atlantic coast more than three hours sooner than upon the Pacific coast. Hence, when it is noon in New York, it is only about nine o'clock in the morning at San Francisco. The time steadily changes in going either east or west, so that no two places on an east-west line have exactly the same time by the sun.

The differences in time between places

Formerly every city used its own suntime, or *local time.* This was a source of great trouble to travelers; for their watches were always wrong when they arrived at new places. When railroads were built, and people began to travel more, and to go longer distances, the many different kinds of local time became even a greater inconvenience.

The trouble caused by such differences

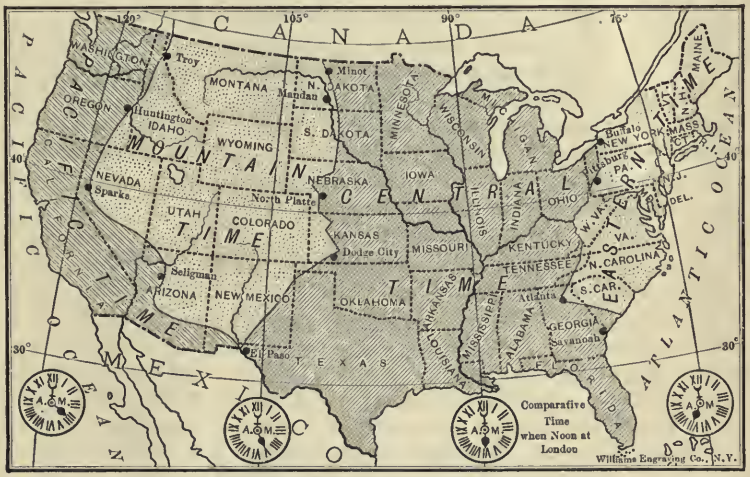
In order to avoid this trouble, our continent has been divided into belts, in each of which the railways, and most of the towns, have agreed to use the same time. Since this time is the *standard for all,* these belts are called the *Standard Time Belts.* The one in the extreme East, including eastern Canada, is called the *Colonial Belt;* the belt next west of this, which includes New England, New York, and some of the other Eastern States, is called the *Eastern Time Belt.* What are the others called (Fig. 688)?

How this trouble is now largely avoided

In traveling across the country from New York City to San Francisco, one starts with his watch set at the standard time for the Eastern Time Belt. After a while he comes to a place where the time is changed one full hour; then he sets his watch back an hour so as to have the Central Time. Going still farther west to the Mountain Belt, the watch is again set back one full hour. What is done when the Pacific Belt is reached? By this arrangement, the same time is used over a very broad belt, and only a few changes of the watch have to be made. State how a watch would have to be changed when one goes *eastward* from San Francisco to New York.

Our study of longitude helps us to understand what determines the places for changing this time. The earth makes one complete rotation every 24 hours, so that the sun passes over 360 degrees in the course of the day of 24 hours. Dividing 360 by 24 gives 15; that is, the number of meridians, one degree apart, that the sun passes over in a single hour. Therefore, when it is noon in a place on the 75th meridian, as at Philadelphia (Fig. 688), it is

How the time for each time belt is fixed



STANDARD TIME IN THE UNITED STATES

Fig. 688. — To show the Standard Time Belts of the United States.

eleven o'clock just 15° west of this, or on the 90th meridian. When it is noon at one point on a meridian, it is noon at other points on that meridian.

This explains what has determined the boundary lines of the time belts. The time selected for the Eastern Belt is that of the 75th meridian; for the Central Belt, that of the 90th meridian, which is just one hour later. What meridian is selected for the Mountain Belt (Fig. 688)? For the Pacific Belt?

Each of these meridians runs through the *middle* of the belt whose time it fixes. Thus, the eastern boundary of the Central Time Belt is halfway between the 75th and 90th meridians, that is, 82½° W. Long.; and the western boundary is halfway between the 90th and 105th meridians, or 97½° W. Long.

As a matter of fact, the railways do not change their time exactly on these meridians.

Why the boundaries for these time belts are not regular

It often happens that the meridians chosen for boundaries pass through very unimportant points, or even cross the railways far out in the open country. Instead of following the exact boundaries, therefore, the railways often select well-known cities as the places where the changes shall be made. For instance, Buffalo, Pittsburg, and Atlanta are the principal cities along the boundary between the Eastern and the Central time belts. Railway time-tables show a change of one hour at these points; and passengers going east or west change their watches one hour here (Fig. 688). Name cities that are located on other boundaries. Thus it happens that the boundaries where the railways *actually* change their time are somewhat irregular. But that makes little difference, so long as there is a general agreement as to the location of the boundaries.

It is true that the Standard Time is incorrect for most places. It is the sun that really fixes our time, and at most points Standard Time cannot agree with the sun, or *local time*. Yet Standard Time relieves us of much trouble, and that is the chief reason for its use.

In order that our system may agree with that of other parts of the world, the time of the Greenwich meridian is taken as a basis. Thus the whole world may be divided into Standard Time belts, with a change of an hour at every fifteenth meridian.

Review Questions

1. Explain the need of some way of locating places exactly. 2. How may houses be located in large cities? 3. How can all places be located in a north and south direction on the earth? 4. How in an east and west direction? 5. Locate several places accurately by using a map. 6. Define latitude; longitude. 7. What is meant by a degree? 8. How many degrees of longitude are there on the equator? 9. How many miles is each of these degrees? 10. Why are meridians not parallel? 11. How many degrees of latitude are there from pole to pole? 12. Explain about the differences in time by the sun, in different places. 13. How have these differences caused much trouble? 14. How is the difficulty now largely avoided? 15. Explain how the time for each time belt is determined. 16. Name the time belts in North America, and locate each. 17. Why are the boundaries not regular?

Suggestions

1. Find how the streets of Washington have been numbered and lettered. 2. What is the latitude and longitude of Boston? Of Washington? Of Chicago? Of your home? 3. Find some cities that are on or near the 42d parallel of latitude. 4. What place is in 25° N. Lat. and 81° W. Long.? What place is near 40° N. Lat. and 75° W. Long.? 5. Find places that have nearly the same latitude as your home. 6. Show on a globe or map, where a ship would be in the Atlantic, when in zero latitude and zero longitude. 7. Examine a globe to see what meridian is a continuation of zero longitude on the other side of the earth. 8. Find the latitude of the Tropic of Cancer; of the Tropic of Capricorn; of the Arctic Circle; of the Antarctic Circle. 9. Where and how much would you change your watch in traveling from San Francisco to Chicago? 10. Examine some railway time-tables to see how they indicate the changes in time. 11. What is the difference, where you live, between Standard time and solar, or sun, time. 12. Find out whether the true Standard Time is telegraphed to your city each day, and if so from what place?

APPENDIX II

REVOLUTION OF THE EARTH, AND ITS EFFECTS

You have already learned (p. 88) that the earth is rapidly rotating on its axis. It has another motion that is also very important. This is its motion, or *revolution*, around the sun, which is illustrated in Figure 689. The object shown in the center of the circle is the sun, and the circle itself shows the course that the earth takes in its revolution.

The yearly motion of the earth

At the same time that the earth is whirling on its axis, it is also swinging around the sun, although the sun is ninety-three million miles from it. It takes a year to complete one revolution. Indeed, the time necessary for this great journey is what fixes the length of our year. The path that the earth takes in this journey is called its *orbit*.

In its revolution, the earth is moving at the rate of more than one and a half million miles a day. What fearful speed! And this, too, while it is whirling, or rotating, on its axis! One might ask, "With such rapid motion, why are we not swept from the earth by the wind?" The answer is that the air, as well as everything else upon the earth, is drawn toward the earth and held in place by the force called *gravity*. It is on account of this force that everything on the earth turns with it in the daily rotation, and swings around with it in its annual revolution.

Importance of the force called gravity and gravitation

Again, if the earth is revolving at such speed, why does it not fly away into space? As a stone swinging round at the end of a string flies off when the string breaks, so it might seem that the earth would fly off into space; for there *appears* to be nothing holding it to the sun.

As a matter of fact there *is* something holding it. It is not a string, nor a rope, to be sure, but something far stronger. The sun is very much larger than the earth; in fact, it is over a million times as large. It attracts the earth, and holds it in place, in much the same way as the force of gravity attracts men and houses to the earth. This *attraction of gravitation*, which the sun exerts upon the earth, is what prevents our sphere from flying off into space; it holds the earth as firmly as the string holds the stone.

The revolution of the earth is what causes our seasons and the changing length of our day and night.

Effects of the earth's revolution

In Figure 689 the lowest sphere, bearing the date September 23, represents the earth as receiving the light of the sun from pole to pole. On that date day and night are equal everywhere upon the earth. It marks the end of summer and the beginning of our autumn.

Following the earth in its revolution (to the right), you will see that, as the months pass, the north pole falls farther and farther into the shadow, until the farthest point is reached on December 21. That is the date for our shortest day and longest night. Farther north the nights are longer still, and the Eskimos, who live within the Arctic Circle, are having night that lasts week after week. It is upon this date that our winter begins.

After December 21, the Arctic region gradually comes into the light once more, until, on March 21, the sun's light again reaches from pole to pole. Day and night are once more equal all over the earth, and warmer weather returns. That date marks the beginning of our spring. Going farther, on June 21, the north pole is shown to be just as far within the light as it was within the shadow on December 21. This is the date for our longest day and shortest night. Farther north, the days are longer still, and within the Arctic Circle the day lasts week

after week. It is upon this day, also, that our summer begins.[1]

After this date, until September 23, the revolution of the earth gradually brings the north pole again toward the shadow. Then, on September 23, the light of the sun once more reaches from pole to pole, so that day and night are again equal, and a year is completed.

Changes of the same kind are also in progress in the southern hemisphere; but the seasons are exactly changed around. That is, it is winter there when it is summer with us; and when the north pole is in darkness, the south pole is bathed in the sunlight.

Figure 690 shows the zones on the earth.

Cause of the zones, and their boundaries

How many are there? Name and locate each. The cause of the zones is found in the slant at which the rays of the sun strike the earth. You know that it is warmer in the middle of the day, when the sun is nearly overhead, than late in the afternoon, when it is near the horizon. In the torrid zone the sun's rays at noon come from directly overhead, or nearly that, and it is very warm there. In the temperate zone they strike the earth at a greater slant; and in the frigid zones at a much greater slant still. For this reason, the heat grows less and less, the nearer one approaches either of the poles.

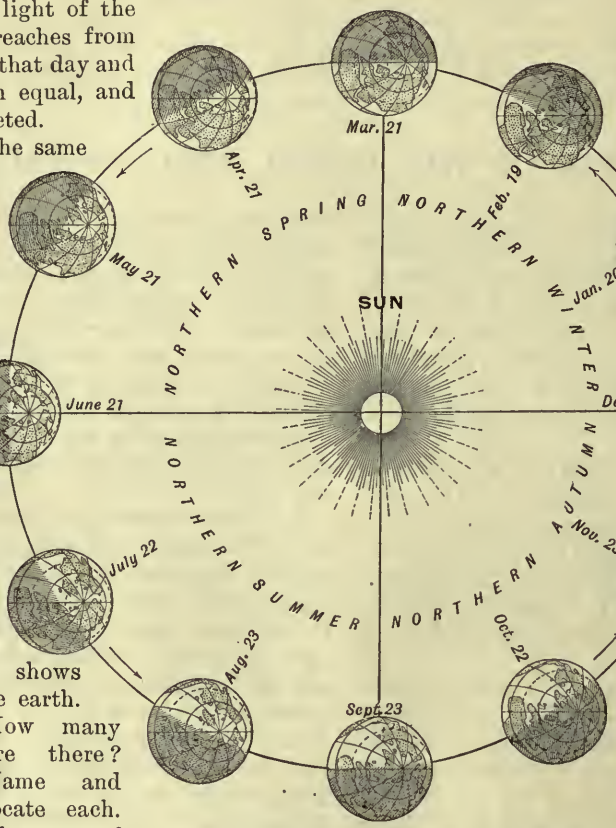


FIG. 689. — To illustrate the revolution of the earth around the sun. The shaded portion represents night. The end of the axis around which the earth rotates is the point where the meridians come together.

The boundaries of the *torrid zone* are easily fixed. They mark the parts of the earth farthest north and south where the sun's rays are found directly overhead, or vertical, at some period of the year. On December 21, when the north pole is farthest within the shadow (Fig. 689), the sun's rays are vertical as far south as the Tropic of Capricorn. On June 21, on the other hand, when the north pole is farthest within the light, the sun's rays are vertical as far north as the Tropic of Cancer.

The *north frigid zone* is the region around the north pole that lies entirely in darkness on December 21. On June 21, this same region lies entirely in the light. The *south frigid zone* is the corresponding region about the south pole.

The two *temperate zones* are merely the wide belts that lie between the torrid zone, on one side, and the frigid zones on the other. One, called the *north temperate zone*, is in the northern hemisphere; the other, called the *south temperate zone*, is in the southern hemisphere.

Name the boundaries of each of the zones. Although it is common to use such boundaries, it must be remembered that a person would find no sharp difference in passing from one zone to the next.

[1] Some teachers may wish to introduce here an explanation of the effects of inclination of the earth's axis, and a more complete study of the seasons. This has not been included in this book because it is felt that, unless the teacher has the necessary apparatus, a mere study from the text is too difficult. The authors believe that it is a subject that is better fitted for the high school age.

How the earth's revolution causes our seasons

The seasons are due to the slant at which the sun's rays strike the earth at different times of the year. The rays reach us with the greatest slant in winter, and for that reason this is our coldest season. In summer, on the other hand, the rays are more nearly vertical, and then we have our warmest weather. As the earth revolves around the sun the slant of the sun's rays is steadily changing, and that causes the change from spring to summer, then to autumn and winter.

How the revolution affects our daily lives

The revolution of the earth around the sun is, therefore, a matter of great importance. It causes our seasons by continually changing the slant at which the sun's rays fall upon us. That affects us in a thousand ways. It determines, for instance, the time when our lamps shall be lighted; when crops shall be planted and harvested; and when the navigation of many of our rivers and lakes shall be opened and closed. It even leads to changes in the kind of clothes that we wear, and greatly influences the sports that we enjoy. Name some of its other influences.

Review Questions

1. Describe the yearly motion of the earth. 2. How are gravity and gravitation important forces? 3. State the effects of the earth's revolution on the length of our seasons, and of our days and nights. 4. With the aid of the diagram (Fig. 689) point out the parts of the earth that are lighted by the sun at the four different seasons. 5. At what seasons are the days equal in length? 6. When are the days longest? When are they shortest? 7. What is the case in the southern hemisphere? 8. State the cause of the zones. 9. Of their boundaries. 10. How does the earth's revolution cause our seasons? 11. How does this revolution influence our daily lives?

FIG. 690. — A map of the Zones.

Suggestions

1. Show by a globe, or a ball, how the two movements of the earth, rotation and revolution, can be going on at the same time. 2. Are the days now growing longer or shorter? 3. During which months do they grow longer?

APPENDIX III

REFERENCES TO DESCRIPTIONS, IN PROSE AND POETRY, OF TOPICS TREATED IN THIS GEOGRAPHY, FOR TEACHER AND PUPIL

Key to Abbreviations, Publishing houses. — American Book Co., New York (*A.B.C.*); D. Appleton & Co., New York (*App.*); The Century Co., New York (*Cent.*); Doubleday, Page & Co., New York (*Doub.*); E. P. Dutton & Co., New York (*Dutt.*); Educational Publishing Co., Boston (*E.P.C.*); The Ginn Co., Boston (*Ginn*); Harper & Bros., New York (*H.B.*); D.C. Heath & Co., Boston (*Heath*); Houghton, Mifflin Co., Boston (*H.M.C.*); J. B. Lippincott Co., Philadelphia (*Lipp.*); Longmans, Green, & Co., New York (*L.G.*); Lothrop, Lee, Shepard, Boston, (*L.S.*); The Macmillan Co., New York (*McM.*); G. P. Putnam's Sons, New York (*Put.*); Rand, McNally & Co., Chicago (*R McN.*); Charles Scribner's Sons, New York (*Scrib.*); Silver, Burdett & Co., New York (*S.B.C.*)

Magazines. — *Publications of the Bureau of American Republics,* Washington, D.C. (B. Amer. R.); *Journal of School Geography,* until 1902 (*J.S.G.*); beginning 1902, *Journal of Geography* (J.G., $0.15 a number, $1.00 a year; Madison, Wis.); *National Geographic Magazine* ($0.25 a number, $2.50 a year; including membership to Society), Washington, D.C. (*N.G.M.*) Reference is made to many articles in these journals. Others of equal value and interest will be found in more recent volumes, which the teacher can easily look up.

It is not, of course, expected that schools will find it possible to obtain all or even a large proportion of the books listed below. This list, which could easily be multiplied to many times the present size, is offered merely as a suggestion to aid those teachers who wish to have a good working library. Many good books are omitted, either because of their cost or for other reasons.

Among the many valuable but expensive books of reference mention may be made of Réclus, "The Earth and its Inhabitants" (App., 19 vols., $5.00 each); Stanford, "Compendiums of Geography" (Scrib., 10 vols., $5.50 each); and Baedeker, "Guide Books" (Scrib. prices variable). The latter may be found in the libraries of friends who have traveled abroad.

Methods and Aids. — McMurry, "How to Study" (H.M.C. $1.25); Geikie, "The teaching of Geography" (McM., $0.60); King, "Methods and Aids in Geography" (L.S., $1.20); Parker, "How to study Geography" (App., $1.50); Trotter, "Lessons in the New Geography" (Heath, $1.00); McMurry, "Special Method in Geography" (McM., $0.70); Frye "The Child and Nature" (Ginn, $0.80); Frye, "Teacher's Manual of Methods in Geography" (Ginn, $0.50); Redway, "Manual of Geography" (Heath, $0.65).

Standard reference works. — "The Statesman's Year Book," published each year, gives latest statistics, etc. (McM., $3.00); Mill, "Hints to Teachers and Students on the Choice of Geographical Books" (L. G. & Co., New York, $1.25); Mill, "International Geography" (App. $3.50); Chamberlain, Home, and World Series (McM., 4 vols. $0.40 each).

Geography Readers, etc. — Strong, "All the Year Round" (Ginn, three volumes, $0.30 each); Payne, "Geographical Nature Studies" (A.B.C., $0.25); Fairbanks, "Home Geography for Primary Grades" (E.P.C., New York, $0.60); Youth's Companion Series (Ginn, $0.25 to $0.40); Starr's "Strange Peoples"

(Heath, $0.40); Lyde, "Man and his Markets" (McM., $0.50); Herbertson, "Man and his Work" (McM., $0.60); Pratt, "American History Stories" (F.P.C., four volumes, $0.36 each); Pratt, "Stories of Colonial Children" (E.P.C., $0.40).

Butterworth, "Zigzag Journey Series" (Dana Estes & Co., Boston, 18 vols., $1.50 each); Carpenter, "Geographical Readers" (A.B.C., 6 vols., $0.60 each); Carroll, "Around the World Series" (S.B.C., 6 vols., $0.60 each); Chamberlain, "Home and World Series" (McM., 4 vols., $0.40 each); Champney, "Three Vassar Girls Series" (Dana Estes & Co., Boston, 11 vols., $0.75 each); Hale, "Family Flight Series" (Lothrop Pub. Co., Boston, 5 vols., $1.50 each); "Highways and Byways Series" (McM., 30 vols., $2.00 each); Knox, "Boy Traveler Series" (H.B., 15 vols., $2.00 each); "Peeps at Many Lands Series" (McM., 30 vols., $0.75 each); Pratt, "People and Places, Here and There" (E.P.C., 5 vols., $0.40 each); "List of Books of Travel in European Countries" (J.G., Dec., '07: 173).

Commercial and Physical Geography.—Chisholm, "Commercial Geography" (L. G. & Co., New York, $0.90); Adams, "Commercial Geography" (App. $1.30); Gannett "Commercial Geography" (A.B.C., $1.00). Shaler, "First Book in Geology" (Heath, $0.60); Tarr, "Elementary Geology" (McM., $1.40); Tarr, "New Physical Geography" (McM., $1.00).

Government Publications. — Almost no reference is made to the many government publications of geographic interest. There are far too many for so brief a list. For instance, the Smithsonian Institution Annual Reports usually contain articles on geographic subjects, and the Fish Commission has published many excellent accounts of the different fishing industries. From the Weather Bureau are issued not merely weather maps, but Annual Reports and Monthly Weather Reviews. Among the publications of the Geological Survey are reports upon Irrigation, Annual Reports containing many excellent accounts of the geology of interesting regions, especially mining regions, and also Annual Reports of the Mineral Resources of the country, with statistics. Besides these, the Geological Survey issues topographic maps (five cents each). A list of these maps can be obtained upon application, and the teacher may find a map of the region where the school is situated.

A great range of topics is covered by the various Annual Reports (called Year Books) and Bulletins of the Department of Agriculture upon such subjects as farming, various crops, forestry, botany, mammals, irrigation, etc. Special reports of importance are issued by the Treasury Department, which also issues Statistical Abstracts on commerce, finance, population, etc. From the State Department, besides valuable special papers (like the Report of the Philippine Commission), are issued the Consular Reports, which have articles and notes upon foreign industries, etc. A wealth of geographical information is contained in the various Census volumes. Besides these, there are other reports, as that on the Precious Metals, issued annually by the Director of the Mint, the Report of the Bureau of Ethnology, and the Report of the Commissioner on Indian Affairs. The maps of the United States Coast Survey will be found of value, especially in those schools located on the coast, which should certainly have maps of their immediate locality. Many states also issue valuable reports on agriculture, mining, manufacturing, etc.

In order to find out about the government publications one can often obtain a list of those issued by a given bureau by writing to the Superintendent of Public Documents, Washington, D.C. A monthly list of all government publications is also prepared by the Superintendent of Public Documents, thus permitting one to keep track of new publications. Some of the publications must be purchased, but many may be obtained by writing to one's congressman or senator, to whom copies are given for free distribution among constituents. The great majority of government documents are issued for free distribution. Applications for these, in moderation, are granted when needed for schools, provided the quota is not already exhausted.

General. — Bartholomew, "The Handy Reference Atlas of the World" (Dutt., $2.50); Brigham, "Geographic Influence in American History" (Ginn, $1.25); Brooks, "Century Book for Young Americans" (Cent., $1.50); Chase and Clow, "Stories of Industry" (E.P.C., 2 vols., $0.40 each); Herbertson, "Descriptive Geographies from Original Sources" (for each continent, McM., $0.70 to $0.90 each); King,

"Picturesque Geographical Readers" (Lee & Shepard, Boston, Vol. 2, $0.72, Vols. 3, 4, and 5, each $0.56); Lummis, "Some Strange Corners of our Continent" (Cent., $1.50); Lyde, "A School Textbook of Geography" (McM. $1.00); Lyde, "Geographies of the Various Continents" (McM., $0.50 to $1.40); McMurry, "Teacher's Manual of Geography" (McM., $0.40); Rocheleau, "The Geography of Commerce and Industry" (E.P.C., $1.00); Rocheleau, "Great American Industries" (C. A. Flanagan, Chicago, 2 vols., $0.50 each); Shaler, "Man and the Earth" (Ginn, $1.50).

Food, Clothing, and Shelter. — Chamberlain, Home and World Series; "How we are Fed"; "How we are Clothed"; "How we are Sheltered"; "How we Travel" (McM., 4 vols. $0.40 each); Fairbanks, "Home Geography," the following topics: "Our Homes," "Homes of the Animals," "The Country Store," "Something about a City," etc. (E.P.C., $0.60); Payne's "Geographical Nature Studies:" "Shelter," "Our Shelter," etc. (A.B.C., $0.25); Starr, "Strange People," "Eskimo," "Negroes," etc. (Heath, $0.40); Youth's Companion Series: "Strange Lands Near Home," "The Play of Eskimo Boys," "The Home of the Icebergs" (Ginn, $0.25); "Under Sunny Skies," "Across the Desert," "From Tangier to Tetuan," etc. (Ginn, $0.25).

The Soil. — King, "The Soil" (McM., $1.25); Tarr, "Elementary Geology," Chapters VI, XI, and pp. 475–487 (McM., $1.40); Shaler, "First Book in Geology," pp. 24–29 (Heath, $0.60); *Nature Study Quarterly*, No. 2, October, 1899 (Cornell University, College of Agriculture, Ithaca, N.Y. Free on application); Kingsley, "Madam How and Lady Why," Chapter IV, "The Transformation of a Grain of Soil" (McM., $0.50); Frye, "Brooks and Brook Basins," section on "How Soil is Made and Carried" (Ginn, $0.50).

Hills and Valleys. — Whittier, "Among the Hills" (poem); Whittier, "The Hilltop" (poem); Hutchinson, "The Story of Hills" (McM., $1.50); see also under "Rivers and River Valleys."

Mountains. — Avebury, "The Beauties of Nature," Chapters V and VI (the former on forests) (McM., $1.50); Jordan, "Science Sketches," section on "The Ascent of the Matterhorn" (A.C. McClurg & Co., Chicago, $1.00); Tarr, "New Physical Geography," Chapter VI (McM., $1.00); Shaler, "First Book in Geology," Chapter V (Heath, $0.60); Kingsley, "Madam How and Lady Why," Chapter V, "The Ice Plough" (McM., $0.50); Fairbanks, "Home Geography for Primary Grades," sections on "The Story of a Mountain," and "What we Learned by Climbing a Mountain," (E.P.C., $0.60); Youth's Companion Series, "Strange Lands Near Home," section on "A Growing Mountain" (Ginn, $0.25); Under Sunny Skies," section on "Mount Vesuvius" (Ginn, $0.25).

Rivers and River Valleys. — Tarr, "Elementary Geology," Chapters VI–X (McM., $1.40); Shaler, "First Book in Geology," Chapter VI (Heath, $0.60); Payne, "Geographical Nature Studies," sections on "Valleys," "Plants of the Valleys," and "Animals of the Valleys," etc. (A.B.C., $0.25); Kingsley, "Madam How and Lady Why," Chapter I, "The Glen" (McM., $0.50); Frye, "Brooks and Brook Basins" (Ginn, $0.50); Avebury, "The Beauties of Nature," Chapters VII and VIII (McM., $1.50); Parker and Helm, "Uncle Robert's Geography," Vol. III, Chapters XII and XIV ($0.50); Poems: "The Brook," Tennyson; "The Mad River," Longfellow; "The Falls of Lodore," Southey; "The Brook and the Wave," Longfellow; "A Water Song," E. G. W. Rowe; "The Endless Story," A. K. Eggleston; "The Impatient River," E. G. W. Rowe; the last three in Payne's "Geographical Nature Studies" (A.B.C., $0.25).

Ponds and Lakes. — Shaler, "First Book in Geology," pp. 125–129 (Heath, $0.60); Tarr, "New Physical Geography," Chapter IX, (McM., $1.00); Avebury, "The Beauties of Nature," Chapter VIII (McM., $1.50); Payne, "Geographical Nature Studies," section on "Pools, Ponds, and Lakes" (A.B.C., $0.25); "The Lakeside," poem, by Whittier.

The Ocean. — Shaler, "Sea and Land" (Scrib., $2.50); Tarr, "New Physical Geography," Chapters X, XI (McM., $1.00); Avebury, "The Beauties of Nature," Chapter IX (McM., $1.50); Andrews, "Stories Mother Nature told her Children," section on "Sea Life" (Ginn, $0.50); Holland, "The Sea Voyage," in "Arthur Bonnicastle"; Dickens, "David Copperfield," Chapter V; "Robinson Crusoe," Chapter III; Taylor, "The Waves," "Wind and Sea," in Marble's "Nature Pictures by American Poets"

(McM., $1.25); Coleridge, "The Ancient Mariner."

The Air. — Tarr, "New Physical Geography," Chapters XII–XIV (McM., $1.00); "A Summer Shower," "Cornell Nature Study Bulletin," No. 1, June, 1899 (free on application to College of Agriculture, Cornell University, Ithaca, N.Y.); Murché, "Science Reader," Book III, sections on "Air," "Vapor in the Air," "Vapor; What Becomes of It?" "What the Atmosphere Is," "Ice, Hail, and Snow" (McM., $0.40); Frye, "Brooks and Brook Basins," sections on "Forms of Water" and "The Atmosphere in Motion" (Ginn, $0.50); Strong, "All the Year Round," Part II, sections 33–39 (Ginn, $0.30); Andrews, "Stories Mother Nature told her Children," section on "The Frost Giants" (Ginn, $0.50); Payne, "Geographical Nature Studies," many excellent stories and poems (A.B.C., $0.25); Marble, "Nature Pictures by American Poets"; "Summer Shower," Dickinson; "Rain," De Land; "Song of the Snowflakes," Cheney; "Cloudland" (McM., $1.25); Wilson, "Nature Study in Elementary Schools," Second Reader, the following poems: "The Rain Shower," "The Wind Song," "The Bag of Winds," "The Sunbeams," "Snowflakes," "Signs of Rain," "The Rainbow" (McM., $0.35); Lovejoy, "Nature in Verse," the following poems: "Merry Rain," "The Clouds," "The Dew," "The Fog," "The Rain," "The Snow," "The Frost," "Jack Frost," "Little Snowflakes" (S.B.C., $0.60); Shelley, "The Cloud"; Whittier, "The Frost Spirit"; Bryant, "The Hurricane"; Whittier, "Snowbound"; Irving, "The Thunderstorm" (prose).

Industry, Commerce, and Government. — Payne, "Geographical Nature Studies," sections on "Occupations," "Trade or Commerce," "Transportation by Land," "Transportation by Water,' School and Country. A.B.C., $0.25); Andrews, "The Stories Mother Nature told her Children," section on "The Carrying Trade" (Ginn, $0.50); Whittier, "Songs of Labor"; Brooks, "Century Book for Young Americans" (Cent., $1.50); Brooks, "The Story of the United States" (The Lothrop Publishing Co., Boston, $1.50); Wilson, "Nature Study in Elementary Schools," Second Reader, section on "Boyhood of Lincoln" (McM., $0.35); Payne, "Geographical Nature Studies," section on "Government" (A.B.C., $0.25).

Maps. — Excellent outline maps of states and continents, costing 1½ to 2 cents each, can be purchased from D. C. Heath & Co., Boston; Rand, McNally & Co., Chicago; and other publishers. Maltby, "Map Modeling" (A. S. Barnes & Co., New York, $1.25); Kellogg, "Geography by Map Drawing" (same publishers, $0.30); Redway, "The Reproduction of Geographical Forms" ($0.30) and "Teacher's Manual of Geography" ($0.65) (both by Heath); Frye, "The Child and Nature" (Ginn, $0.80); Frye, "Sand and Clay Modeling" (A.B.C., New York, ($0.10); Frye, "Teacher's Manual of Methods in Geography" (Ginn, $0.50); Kellogg, "How to Teach Clay Modeling" (A. S. Barnes & Co., New York, $0.25); King, "The Picturesque Geographical Readers," First Book, Lesson XIII (L. S., $0.50).

Form and Size of the Earth. — Andrews, "Seven Little Sisters," section on "The Ball Itself" (Ginn, $0.50); Irving, "Life and Voyages of Christopher Columbus" (Put., New York, $1.75); for Columbus, Magellan, etc., see various school histories. Also, poem on "Columbus" by Tennyson, D'Anvers, "Science Ladders," Vol. I (E.P.C., $0.40); Gee, "Short Studies in Nature Knowledge," section on "The Great Globe Itself" (McM., $0.10).

Daily Motion of the Earth and its Results. — Redway, "Manual of Geography," Chapter VI (Heath, $0.65); "Daybreak" (poem), Longfellow.

The Zones. — Eggleston, "Stories of American Life and Adventure," section on "Adventures in Alaska" (A.B.C., $0.50); Andrews, "Seven Little Sisters," sections on "The Little Brown Baby," "Agoonack, the Esquimau Sister," and "How Agoonack Lives" (Ginn, $0.50); Schwatka, "The Children of the Cold" (E.P.C., $1.25); Ballou, "Footprints of Travel," Chapters XXIX and XXX (Ginn, $0.60); King, "The Picturesque Geographical Readers," First Book, Part 2 (L.S., $0.50).

The Continents and Oceans. — Andrews, "Seven Little Sisters" (Ginn, $0.50); Ballou, "Footprints of Travel" (Ginn, $0.60); Kelly, "Leaves from Nature's Story Book," Vol. III, "A Visit to the Bottom of the Ocean" (E.P.C., $0.40); Shaler, "The Story of Our Continent," section on "Coral Reefs" (Ginn, $0.75); Tarr, "Elementary Geology," p. 251 (McM., $1.40); D'Anvers, "Science Ladders," Vol. III, Lesson VIII (E.P.C., $0.40); Youth's Companion Series, "Strange Lands Near Home" and

"The Wide World" (Ginn, each $0.25); Andrews, "Each and All" (L.S., $1.00); Miller, "Little People of Asia" (E.P.D., $2.50); Schwatka, "Children of the Cold" (E.P.C., $1.25); Shaw, "Big People and Little People of Other Lands" (A.B.C., $0.30); Poems: Shelley, "A Vision of the Sea"; Longfellow, "The Secret of the Sea"; Longfellow, "The Wreck of the Hesperus"; Holmes, "The Chambered Nautilus"; Byron, "The Ocean."

North America. — Carpenter, "Geographical Reader of North America" (A.B.C., $0.60); Herbertson, "Descriptive Geography: North America" (McM., $0.75); Shaler, "The Story of our Continent" (Ginn, $0.75); Lyde, "North America" (McM., $0.50); Chase and Clow," "Stories of Industry," Vols. I and II (E.P.C., $0.40); Hurlburt, "Historic Highways of North America" (A. H. Clark Co., Cleveland, $2.50); McMurry, "Excursions and Lessons in Home Geography" (McM., $0.50); McMurry, "Larger Types of American Geography" (McM., $0.75); Pratt, "American History Stories" (E.P.C., 4 vols., $0.36 each); Reynolds, "The Americas" (McM., $0.75); Russell, "North America" (App., $2.50); Russell, "Glaciers of North America" (Ginn, $1.75); Russell, "Lakes of North America" (Ginn, $1.50); Russell, "Rivers of North America" (Put., $2.00); Semple, "American History and its Geographic Conditions" (H.M.C., $1.25).

The United States. General. — Adams, "America's Economic Supremacy" (McM., $1.25); Adams, "The New Empire" (McM., $1.50); Austin, "Steps in the Expansion of our Territory" (App., $1.25); Baedeker, "The United States" (Scrib., $3.60); Brigham, "Geographic Influences in American History" (Ginn, $1.25); Brooks, "Century Book of American Colonies" (Cent. $1.50); Brooks, "First across the Continent" (Scrib., $1.50); Bryce, "American Commonwealth" (McM., $4.00; abridged edition, $1.75); Channing, "Students' History of the United States" (McM., $1.40); Fiske, "How the United States became a Great Nation" (Ginn, $1.25); Gannett, "The Building of a Nation" (H. T. Thomas Co., New York, $2.50); Hale, "Tarry at Home Travels" (McM., $2.50); McMurry, "Type Studies from Geography of the United States" (McM., $0.50); Newell, "Irrigation in the United States" (Crowell & Co., New York, $2.00); Patton, "The Natural Resources of the United States" (App., $3.00); Ries, "Economic Geology of the United States" (McM., $2.00); Shaw, "Uncle Sam and His Children" (A. S. Barnes Co., New York, $1.20); Smith, "Our Own Country" (S.B.C., $0.50); Smith, "The Story of Iron and Steel" (App., $0.75); Stevenson, "Across the Plains" (Scrib., $1.25); Stoddard, "Beautiful Scenes of America" (Saalfield Pub. Co., Akron, O., $0.75); "The Story of Paper Making" (Butler Paper Co., Chicago, $1.25); Whitney, "The United States" (Little, Brown & Co, Boston, $2.00); Young, "The Cotton Industry" (Scrib., $0.75); Eggleston, "Stories of American Life and Adventure," "Stories of Whaling," and "A Whaling Song," "A Story of Niagara," "How Frémont Crossed the Mountains," "The Finding of Gold in California," "Descending the Grand Cañon," and several Indian stories, (A.B.C., $0.50); Chase and Clow, "Stories of Industry," Vol. I, "Lumbering," "Ship Building," "Marble and Granite," "Slate and Brick," etc., Vol. II, "Manufacturing," "Fisheries," "Whaling," etc. (E.P.C., each volume $0.40); Adams, "The United States: Land and Water" (*N.G.M.*, May, '03: 171); Austin, "The United States: Her Industries" (*N.G.M.*, Aug., '03: 301); Kirchhoff, "The United States: Her Mineral Resources" (*N.G.M.*, Sept., '03: 331); Price, "The Influence of Forestry upon the Lumber Industry of the United States" (*N.G.M.*, Oct., '03; 381); "The Growth of the United States" (*N.G.M.*, Sept., '98: 377); Wiley, "The United States: Its Soils and Their Products" (*N.G.M.*, July, '03: 261); Brown, "Seaports in the United States" (*J.G.*, Oct., '05: 337); Emerson, "A Glimpse of Steel Manufacture" (*J.G.*, April, '03: 169). Poems: Whittier, "Mogg Megone," "Pentucket," "The Bridal of Pennacook," "The Merrimack," "The Norsemen"; Longfellow, "The Woods in Winter," "The Building of the Ship," "The River Charles"; Emerson, "Boston"; Riley, "When the Frost is on the Punkin," "Knee Deep in June"; Bryant, "The Prairies," "The Hunter of the Prairies"; Whittier, "The Pass of the Sierra"; Joaquin Miller, "In the Yosemite Valley"; Holmes, "Our Country."

Northeastern States. — Bacon, "Historic Pilgrimages in New England" (S.B.C., $1.50); Davis, "Physical Geography of Southern New England" (A.B.C., $0.20); Drake, "Nooks and

Corners of the New England Coast" (H.B., $2.50); Emerson, "New England States" (McM., $0.30); Johnson, "New England and its Neighbors" (McM., $2.00); Kimball, "Vermont for Young Vermonters" (App., $1.00); Kipling, "Captains Courageous" (Cent., $1.50); Thoreau, "Maine Woods" (H.M.C., $1.50); Barton, "General Geographic Features in and around Boston" (*J.G.*, June, '03: 277); Dodge, "Approaching Boston" (*J.G.*, June, '03: 261); Emerson, "Boston, A Center of Industry" (*J.G.*, June '03: 315); Gulliver, "Geographical Development of Boston" (*J.G.*, June, '03: 323); "Geographical Notes on Boston" (*J.G.*, June, '03: 330); Bibliography of Boston and Vicinity (*J.G.*, June, '03: 333); King, "Excursions in and and around Boston" (*J.G.*, June, '03: 286); Shurtleff, "Boston Parks" (*J.G.*, June, '03: 302); Brigham, "From Trail to Railway through the Appalachians" (Ginn, $0.50); Gilbert, "Niagara Falls and their History" (A.B.C., $0.20); Rupert, "Pennsylvania" (McM., $0.30); Southworth, "Story of the Empire State" (App., $0.75); Whitbeck, "New Jersey" (McM., $0.30): Whitbeck, "New York" (McM., $0.30); Brigham, "The Eastern Gateway of the United States" (*J.S.G.*, April, '00: 127).

Southern States. — Barrett, "Tennessee" (McM., $0.30); Brook, "Cotton: Its Uses, Culture, etc." (Spon & Chamberlain, New York, $3.00); Burkett, "Cotton" (Doub., $2.00); Earle, "Southern Agriculture" (McM., $1.25); Chandler & Foushee, "Virginia" (McM., $0.30); Twitchell, "Maryland" (McM., $0.30); Faust and Allen, "North Carolina" (McM., $0.30); Hitchcock, "Louisiana Purchase" (Ginn, $1.25); Littlejohn, "Texas" (McM., $0.35); Mitchell, "Georgia; Land and People" (F. L. Mitchell, Atlanta, Ga., $1.25); Ralph, "Dixie, or Southern Scenes and Sketches" (H.B., $2.50); Taylor and Stephen, "Louisiana" (McM., $0.25); Tompson, "From Cotton Field to the Cotton Mill" (McM., $1.50); Willoughby, "Across the Everglades" (Lipp., $1.50); Dietz, "The Fall Line" (*J.G.*, June '05: 244); Harrison, "Cultivation of Rice in the United States" (*J.G.*, Sept., '03: 369); Lloyd, "The Delta of the Mississippi" (*J.G.*, May, '04: 204); Series of papers on the Geography of the Louisiana Purchase (*J.G.*, June, '04: 243–278); "The Mississippi River" (*J.G.*, Oct., '02: 374).

Central States. — Bender, "Iowa" (McM., $0.20); Barnard, "Missouri" (McM., $0.30); Condra, "Geography of Nebraska" (University Pub. Co., Lincoln, Neb., $.90); Cooley, "Michigan" (H.M.C., $1.10); Darling, "Illinois" (McM., $0.30); Dryer, "Studies in Indiana Geography" (Inland Pub. Co., Indianapolis, Ind., $0.50); Fox, "Out Doors in Old Kentucky" (Scrib., $1.75); Grinnel, "Jack, the Young Explorer" (F. A. Stokes, New York, $1.25); Hall, "Geography of Minnesota" (H. W. Nelson Co., Minneapolis, Minn., $1.20); Hovey, "Celebrated American Caverns" (B. Clarke Co., Cincinnati, O., $2.00): Stanchfield, "Lumbering in Minnesota" (D. Stanchfield, Minneapolis, Minn., $1.00); Thwaites, "Down Historic Waterways," "On the Storied Ohio" (McClurg, Chicago, $1.20 each); Willard, "Story of the Prairies" (R. McN., $1.75); Wilson, "Ohio" (McM., $0.30); Winans, "Kansas." (McM., $0.30); Hall, "Minnesota, a Sketch" (*J.G.*, June, '02: 241); Hall, "Minneapolis and its Environs" (*J.G.*, June, '02: 249).

Western States.— Austin, "The Land of Little Rain" (H.M.C., $2.00); Brooks, "First across the Continent" (Scrib., $1.50); Brown, "The Glory Seekers" (McClurg, Chicago, $1.50); Clark, "Indians of the Yosemite Valley and Vicinity" (G. Clark, Yosemite Valley, Cal., $1.00); Cody, "True Tales of the Plains" (Cupples & Leon, New York, $1.00); Fairbanks, "California" (McM., $0.30); Fultz, "Out of Door Studies in Geography" (Public Schools Pub. Co., Bloomington., Ill., $0.60); Groham, "Camps in the Rockies" (Scrib., $1.25); Hewitt, "Across the Plain and over the Divide" (Broadway Pub. Co., New York, $1.50); Irish, "Arizona" (McM., $0.20); Jones, "Utah" (McM., $0.40); Jordon, "California and the Californians" (A. H. Robertson, San Francisco, Cal., $0.75); Muir, "Our National Parks" (H.M.C., $1.75); Munk, "Arizona Sketches" (Grafton Press, New York, $2.00); Paine, "Greater America" (Outing, New York, $1.50); Parkman, "The Oregon Trail" (Little, Brown & Co., Boston, $2.00); Prudden, "On the Great American Plateau" (Put., $1.50); Ralph, "Our Great West" (H.B., $2.50); "The Pacific Coast Guide Book" (R. McN., $1.00); Tonge, "Handbook of Colorado Resources" (T. Tonge, Denver, Col., $0.50); Van Dyke, "The Desert" (Scrib., $1.25); "Washington" (McM., $0.20);

Barrows, "The Colorado Desert" (*N.G.M.*, '00: 337); Blanchard, "Home Making by the Government" (*N.G.M.*, April, '08: 250); Blanchard, "Millions for Moisture" (*N.G.M.*, April, '07: 217); Chapman, "Deserts of Nevada and the Death Valley" (*N.G.M.*, Sept., '06: 483); Chapman, "Our Northern Rockies" (*N.G.M.*, Oct., '02: 361); McGee, "The Yuma Trail" (*N.G.M.*, April '01: 103); Newell, "The Reclamation of the West" (*N.G.M.*, Jan., '04: 15); Ransome, "The San Francisco Earthquake" (*N.G.M.*, May, '06: 280); Rody, "Arizona and New Mexico" (*N.G.M.*, '06: 101); "The Redwood Forest of the Pacific Coast" (*N.G.M.*, May, '99: 145); Dodge, "Life on the Colorado Plateaus" (*J.S.G.*, Feb., '00: 45); Dodge, "The Big Trees of California" (*J.S.G.*, Jan., '01: 16); Russell, "Climate, Vegetation, and Drainage of Cascade Mountains" (*J.S.G.*, Oct., '01: 280); Lee, "Canyons of Southeastern Colorado" (*J.G.*, Oct., '02: 357).

Alaska. — Burroughs, "Far and Near" (H.M.C., $1.10); De Windt, "Through the Gold Fields of Alaska to Bering Strait" (H.B., $2.50); Edwards, "Into the Yukon" (R. Clarke Co., Cincinnati, O., $1.50); Greeley, "Alaska," (Scrib., $2.00); Higginson, "Alaska, the Great Country" (McM., $2.50); MacDonald, "The White Trail" (H. M. Caldwell, Boston, $1.25); Scidmore, "Guidebook to Alaska" (App., $1.25); Stoddard, "Over Rocky Mountains to Alaska" (B. Herder, St. Louis, $0.75); Thompson, "Gold Seeking in the Dalton Trail" (Little, Brown Co., Boston, $1.50); "Alaska" (*N.G.M.*, April, '98: 105, twelve articles); "An Exposition through the Yukon District" (*N.G.M.*, Vol. 2, '92: 117); Brooks, "Geography of Alaska" (*N.G.M.*, May, '04: 213); Gannett, "The General Geography of Alaska" (*N.G.M.*, May, '01: 180); Georgeson, "The Possibilities of Alaska" (*N.G.M.*, March '02: 81); Grosvenor, "Reindeer in Alaska" (*N.G.M.*, April, '03: 127); "Life on a Yukon Trail" (*N.G.M.*, Oct., '99: 337 and 457); "The Alaskan Boundary" (*N.G.M.*, Nov., '99: 425); Bayley, "The Yukon and its Basin" (*J.G.*, Oct., '08: 25); Brooks, "An Exploration to Mt. McKinley" (*J.G.*, Nov., '03: 441); Brooks, "Geography of Alaska" (United States Geological Survey, Washington).

The Polar Regions. — Baker, "Out of the Northland" (McM., $0.25); Hayes, "The Land of Desolation" (H.B., $1.75); Horton, "The Frozen North" (D. C. Heath, Boston, $0.40); Long, "Northern Trails" (Ginn, $1.50); Nansen, "First Crossing of Greenland" (L.G. $1.25); Mrs. Peary, "The Snow Baby" (F. A. Stokes, New York, $1.30); Mrs. Peary, "Children of the Arctic" (F. A. Stokes, $1.20); Mrs. Peary, "My Arctic Journal" (Contemporary Pub. Co., New York, $2.00); Schwatka, "Children of the Cold" (E.P.C. $1.25); Scott, "From Franklin to Nansen" (Lipp., $1.25); Scott, "Romance of Polar Exploration" (Lipp., $1.50); Smith, "Eskimo Stories" (R.McN., $1.00); "An Ice-wrapped Continent, Antarctica" (*N.G.M.*, Feb., '07: 95); Peary, "The Value of Arctic Exploration" (*N.G.M.*, Dec. '03: 429); "Climatic Control in Greenland" (*J.S.G.*, Oct., '00: 281); Poem: "An Arctic Vision," Bret Harte.

West Indies and Bermuda. — Arthur, "Ten Thousand Miles in a Yacht" (Dutt., $2.00); "Handbooks on Haiti and Santo Domingo" (*B. Amer. R.*, $0.35 each); Hill, "Cuba and Porto Rico" (Cent., $3.00); Kennan, "Tragedy of Pelée" (McM., $1.00); Kingsley, "At Last: A Christmas in the West Indies" (McM., $1.25); Nicholas, "Around the Caribbean and across Panama" (H. M. Caldwell, Boston, $2.00); Ober, "Our West Indian Neighbors" (James Pott & Co., $2.00); Rodway, "The West Indies and the Spanish Main" (Put., $1.75); Stoddard, "Cruising among the Caribbees" (Scrib., $1.50); "The United States and Porto Rico" (L.G., $1.30); Chester, "Haiti, a Degenerating Island" (*N.G.M.*, March, '08: 200); "Cuba" (*N.G.M.*, Sept., '98: 193); "Cuba, the Pearl of the Antilles" (*N.G.M.*, Oct., '06: 535); Hill, "Cuba and Porto Rico" (Cent., $3.00); Hill and Russell, "Volcanic Disturbances in the West Indies" (*N.G.M.*, July, '02: 223); "Porto Rico" (*N.G.M.*, March, '99: 93); Russell, "Volcanic Eruptions on Martinique and St. Vincent" (*N.G.M.*, Dec., '02: 415); Wilcox, "Among the Mahogany Forests of Cuba" (*N.G.M.*, July, '08: 485); Cline, "The Island of Porto Rico" (*J.S.G.*, Dec., '01: 362); Heilprin, "The Bermuda Islands" (A. Heilprin, Philadelphia, $3.50).

Hawaiian and Small Islands. — Alexander, "A Brief History of the Hawaiian People" (A.B.C., $1.50); Baldwin, "Geography of the Hawaiian Islands" (A.B.C., $0.60); Dole, "Hiwa: Tale of Ancient Hawaii" (H.B., $1.00); "Greatest America; the Latest Acquired

Possessions" (Perry Mason Co., Boston $0.50); Young, "The Real Hawaii" (Doubleday, New York, $1.50); Wallace, "Island Life" (McM., $1.75); Whitney, "Hawaiian America" (H.B., $2.50); articles on "Samoa" (*N.G.M.*, June, '99 207).

Philippine Islands. — Coulter, "Nature Study Reader for the Philippine Islands" (App., $0.60); Coursey, "History and Geography of the Philippine Islands" (Educator School Supply Co., Mitchell, S.D., $0.50); Jernegan, "Philippine Geography" Heath, $0.60); Knapp, "Story of the Philippines" (S.B.C., $0.60); Sonnichsen, "Ten Months a Captive among Filipinos" (Jennings & Graham, Cincinnati, $1.75); Worcester, "The Philippine Islands and their People" (McM., $2.50); Younghusband, "The Philippines and Round About" (McM., $2.50); "Report of the Philippine Commission" (State Department, Washington); Articles on the Philippines (*N.G.M.*, June '98: 257–304; Oct., '99: 33–72; Nov. '00: 1); Barrett, "The Philippine Islands and their Environment" (*N.G.M.*, Jan., '00: 1); Gannett, "The Philippine Islands and their People" (*N.G.M.*, March, '04: 71); Papers on Philippines (*N.G.M.*, May, '03); Sanger and others, "A Revelation of the Filipinos" (*N.G.M.*, April, '05: 139); "The Climate of the Philippine Islands" (*J.S.G.*, Dec., '99: 361).

Canada. — Aner, "The North Country" (R. Clarke Co., Cincinnati, $2.00); Butler, "Wild Northland, a Winter with a Dog" (A. S. Barnes & Co., New York, $1.00); "Canadian Guide Book" (App., $1.00); Coe, "Our American Neighbors" (S.B.C., $0.60); Howe, "Fourteen Thousand Miles, a Carriage, and Two Women" (F. S. Howe, Leominster, Mass., $1.50); Morely, "Down North and Up Along," (Dodd, Mead & Co., New York, $1.50); Parkin, "The Great Dominion" (McM., $1.75); Pauli, "Record of a Trip through Canada's Wilderness" (J. A. Pauli & Co., New York, $1.50); Plummer, "Roy and Ray in Canada" (Henry Holt & Co., New York, $1.75); Ralph, "On Canada's Frontier" (H. B., $2.50); Statistical Year Book (each year by Department of Agriculture, Ottawa); Wallace, "Long Labrador Trail" (Outing, New York, $1.50); Willcox, "Exploration in the Canadian Rockies" (*N.G.M.*, May, '02: 151; June, '02: 185). Poem: "Evangeline," Longfellow.

Mexico. — Bancroft, "Recources and Development of Mexico" (The Bancroft Co., San Francisco, $4.50); Edwards, "On the Mexican Highlands" (Jennings & Graham, Cincinnati, $1.50); Fitzgerrell, "Guide to Tropical Mexico" (J. J. Fitzgerrell, Mexico City, $0.50); "Guide to Mexico" (App., $1.50); Griffin, "Mexico of To-day" (H.B., $1.50); Hornaday, "Camp Fires on Desert and Lava" (Scrib., $3.00); Lummis, "The Awakening of a Nation" (H.B., $2.50); McGary, "An American Girl in Mexico" (Dodd, Mead & Co., New York, $1.00); Noll, "Short History of Mexico" (McClurg & Co., Chicago, $0.75); Plummer, "Roy and Ray in Mexico" (Henry Holt Co. New York, $1.75); Prescott, "Conquest of Mexico" (A. L. Burt & Co., New York, $1.25); Romero, "Coffee and India Rubber Culture in Mexico" (Put., $3.00); Romero, "Geographical and Statistical Notes on Mexico" (Put., $2.00); Schwatka, "In the Land of Cave and Cliff Dwellers" (E.P.C., $1.25); Smith, "White Umbrella in Mexico" (H.M.C., $1.50); Darton, "Mexico, the Treasure House of the World" (*N.G.M.*, Aug., '07: 493); Foster, "The New Mexico" (*N.G.M.*, Jan. '02: 1); Nelson, "A Winter Expedition in Southwestern Mexico" (*N.G.M.*, Sept., '04: 341).

Central America and Panama Canal Zone.— Belt, "Naturalist in Nicaragua" (Scrib. and Welford, New York, $3.00); Calvo, "The Republic of Costa Rica" (R.McN., $2.00); Charles, "Honduras" (R.McN., $1.50); Davis, "Three Gringos in Venezuela and Central America" (H.B., $1.50); Herbertson, "Descriptive Geography, Central and South America" (McM., $0.70); Stevens, "A Trip to Panama" (Lesan-Gould Co., St. Louis, gratis); Handbooks (*B. Amer. R.*) on Costa Rica, Honduras, Salvador, and Nicaragua (each $0.35, Guatemala, $0.25); Monthly Bulletins of the same Bureau (each $0.25), also contain information about American Republics; "Across Nicaragua" (*N.G.M.*, Vol. 1, '89: 315); Articles on the Nicaragua Canal (*N.G.M.*, Aug., '99: 297); Burr, "The Republic of Panama," (*N.G.M.*, Feb. '04: 57); "Notes on Panama and Colombia" (*N.G.M.*, Dec., '03: 458); Chester, "The Panama Canal" (*N.G.M.*, Oct. '05: 445 and 467); Thompson, "Henequen — the Yucatan Fibre" (*N.G.M.*, April, '03: 150).

South America. — There is a handbook for each of the republics, issued by the Bureau of

American Republics, Washington, D.C., price from $0.30 to $0.50 each. Andrews, "Brazil, its Conditions and Prospects" (App. $1.50); Ballou, "Equatorial America" (H.M.C., $1.50); Bates, "A Naturalist on the River Amazon" (Humbolt Library, New York, $1.00); Butterworth, "South America and Panama" (Doub., $1.00); Carpenter, "Geographical Reader, South America" (A.B.C., $0.60); Carpenter, "South America, Social, Industrial, and Political" (Saalfield Pub. Co., Akron, O., $3.00); Childs, "South American Republic" (H.B., $3.50): Conway, "The Bolivian Andes" (H. B., $3.00); Coe, "Our American Neighbors" (S.B.C., $0.60); Curtis, "Between the Andes and the Ocean" (H. S. Stone, Chicago, $2.50); Curtis, "Capitols of Spanish America" (H.B., $3.50); Curtis, "Venezuela" (H.B., $1.25); Elliott, "Chili" (Scrib., $3.00); Ford, "Tropical America" (Scrib., $2.00); Hale, "The South Americans" (Bobbs-Merrill Co., Indianapolis, $2.50); Herbertson, "Descriptive Geography, Central and South America" (McM., $0.70); Pepper, "Panama to Patagonia." McClurg, Chicago, $2.50); Pérez Triana, "Down the Orinico in a Canoe" (Crowell & Co., New York, $1.25); Pratt, "Pizarro: Conquest of Peru" (E.P.C., $0.30); Reynolds, "The Americas" (McM., $0.75); Rodway, "In the Guiana Wilds" (L. Co. Page & Co., Boston, $1.25); Ruhl, "Other Americans" (Scrib., $2.00); Scruggs, "Columbian and Venezuelan Republics" (Little, Brown & Co., Boston, $2.50); Whymer, "Travels amongst the Great Andes of the Equator" (Scrib., $2.50); Adams, "Cuzco: America's Ancient Mecca" (*N.G.M.*, Oct., '08: 669); "A Journey in Ecuador") *N.G.M.*, July, '96: 238); "A Winter Voyage through the Straits of Magellan" (*N.G.M.*, May, '97: 129); Calderon, "Peru, its Resources, Development, and Future" (*N.G.M.*, Aug., '04: 311; Curtis, "The Road to Bolivia" *N.G.M.*, June, '00: 209; July, '00: 264); Lee, "Beautiful Ecuador" (*N.G.M.*, Feb., '07: 81); Pepper, "South America Fifty Years Hence," and other articles on South America (*N.G.M.*, Aug., '06: 427, 432, 449, 453, 456); "Patagonia" (*N.G.M.*, Nov., '97: 305); Root, "An Awakened Continent to the South of Us" (*N.G.M.*, Jan., '07: 61); "Venezuela, her Government," etc. (*N.G.M.*, Feb., '96: 49); "A Day in the Falkland Islands" *J.S.G.*, Feb., '98: 49); "Climatic Notes made during a Voyage around South America" (*J.S.G.*, Sept. and Oct., '98: 241 and 297): Johnson, "Trade and Industries of Western South America" (*J.G.*, Jan., '02: 25; Feb., '02: 51; March, '02: 109); "The Climatic Control of Occupation in Chile" *J.S.G.*, Dec. '97: 289); "The Valley of the Amazon and its Development" (*J.S.G.*, Sept., '97: 193).

Europe. — Amicis, "Holland and its People" (Put., $2.00); Bailey, "First Impressions of Europe" (Grafton Press, New York, $1.25); Bröchner "Danish Life in Town and Country" (Put., $1.20); Carpenter, "Geographical Reader of Europe" (A.B.C., $0.75); Coe, "Modern Europe" (S.B.C., $0.60); Coolidge, "The Alps in Nature and History" (Dutt., $2.50); Corbin, "Schoolboy Life in England" (H.B., $1.25); Davis, "About Paris" (H.B., $1.25); Davis, "Our English Cousins" (H.B., $1.25); Davis, "The Rulers of the Mediterranean" (H.B., $1.25); Dillon, "Motor Days in England") Put., $3.00); Du Chaillu, "Land of the Long Night" (Scrib., $2.00); Edwards, "Through Scandinavia to Moscow" (R. Clarke Co., Cincinnati, $1.50); Emerson, "European Glimpses and Glances" (Cassel & Co., New York, $1.00); Finck, "Spain and Morocco" (Scrib., $1.25); Geikie, "The Scenery in Scotland" (McM., $3.50); Green, "A Short Geography of the British Isles" (McM., $0.90); Hapgood, "Russian Rambles" (H.M.C., $1.50); Herbertson, "Descriptive Geographies" ("Europe," $0.90; "The British Empire," $0.75, McM.); King, "Northern Europe" (Lee & Shepard, Boston, $0.60); Knight, "Over-sea Britain" (Dutt., $2.00); Loring, "A Year in Portugal" (Put., $1.50); Lubbock, "The Scenery of Switzerland" (McM., $1.50); Lyde, "A Geography of the British Isles" (McM., $0.60); Lyde, "A Geography of Europe" (McM., $0.50); Mackinder, "Britain and the British Isles" (App., $2.00); Moncrieff, "The Peak Country" (McM., $2.50); Monroe, "Norway, its People, its Fjords, and its Fjelds" (L. C. Page, Boston, $3.00); Nixon-Roulet, "Our Little Grecian Cousin" (L. C. Page, Boston, $0.60); Partsch, "Central Europe" (App., $2.00); Paton, "Picturesque Sicily" (H.B., $2.50); Pratt, "Legends of Norseland" (E.P.C., $0.40); Pratt, "Stories of England" (E.P.C., $0.40); Pratt, "Stories from Old Germany" (E.P.C., $0.40); Sime, "Geography of Europe" (McM., $0.80); Stephens, "Portugal" (Put., $1.50); Stepniak, "The Russian Peas-

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Asia.—Bishop, "Unbeaten Tracks in Japan" (Put., $2.50); Bramhall, "Wee Ones in Japan" (H.B., $1.00); Brownell, "The Heart of Japan" (McClure, Phillips & Co., New York, $1.50); Carpenter, "Geographical Reader: Asia" (A.B.C., $0.60); Colquhoun, "China in Transformation" (H.B., $3.00); Curtis, "Howadji in Syria" (H.B., $1.50); Douglas, "The Land where Jesus Christ Lived" (Thomas Nelson & Son, New York, $1.00); Giles, "China and the Chinese" (McM., $1.50); Griffis, "Korea, the Hermit Nation" (Scrib., $2.50); Hamilton, "Korea" (Scrib., $1.50); Herbertson, "Descriptive Geography, Asia" (McM., $0.80); Hogarth, "The Nearer East" (App., $2.00); Kipling, "The Jungle Books" (Cent., $1.50); Knight, "Where Three Empires Meet" (L.G., $1.25); Lee, "When I was a Boy in China" (Lothrop Pub. Co., Boston, $0.60); Little, "Through the Yangtse Gorges" (Scrib., $2.50); Lyall, "The Rise of the British Dominion in India" (Scrib., $1.50); Lyde, "A Geography of Asia" (McM., $0.50); Mathews, "New Testament Times in Palestine" (McM., $0.75); Norman, "The Real Japan" (Scrib., $1.50); Parker, "China, from Earliest Times to the Present Day" (Dutt., $2.50); Pratt, "Stories of China" (E.P.C., $0.40); Pratt, "Stories of India" (E.P.C., $0.40); Ralph, "Alone in China" (H.B., $2.00); Scidmore, "Jinrikisha Days in Japan" (H.B., $2.00); Smith, "Life in Asia" (S.B.C., $0.60); "The Crisis in China" (H.B., $1.00); Austin, "Commercial Prize of the Orient" (*N.G.M.*, Sept., '05: 399); Barrett, "China, her History and Development" (*N.G.M.*, June '01: 209; July '01: 266); Cresson, "Persia, the Awakening East" (*N.G.M.*, May '08: 356); Fairchild, "Travels in Arabia and along the Persian Gulf" (*N.G.M.*, April, '04: 139); Grosvenor, "Siberia" (*N.G.M.*, Sept. '01: 317); Harris, "Some Ruined Cities of Asia Minor" (*N.G.M.*, Nov., '08: 741; Dec., '08: 833; Jan., '09: 1); Hill, "A Trip through Siberia" (*N.G.M.*, Feb., '02: 37); Webster, "Japan and China" (*N.G.M.*, Feb., '01: 70); Williams, "The Link Relations of Southwestern Asia" (*N.G.M.*, July '01: 249; Aug., '01: 291); Fenneman, "Geography of Manchuria" (*J.G.*, Jan., '05: 6); Huntington, "Khirghiz Nomads and their Influence on the

High Plateaus" (*J.G.*, May, '08: 313); "The Russo-Siberian Plain" (*J.S.G.*, March, '00: 81). Poems by Whittier: "The Holy Land, Palestine," "The Pipes of Lucknow."

Africa. — Badlam, "Views in Africa" (S.B.C., $0.72); Bigelow, "White Man's Africa" (H.B., $2.50); Bryce, "Impressions of South Africa" (Cent., $3.50); Carpenter, "Geographical Reader of Africa" (A.B.C., $0.60); Crosby, "Abyssinia, the Country and People" (*N.G.M.*, March, '01: 89); Curtis, "Nile Notes of a Howadji" (H.B., $1.50); Davis, "The Congo and Coasts of Africa" (Scrib., $1.50); Drummond, "Tropical Africa" $1.00); Du Chaillu, "My Apingi Kingdom"; "Wild Life Under the Equator" (H.B., $1.25 each); Edwards, "A Thousand Miles up the Nile" (Dutt., $2.50); Herbertson "Descriptive Geography, Africa" (McM., $0.70); Hillegas, "Oom Paul's People" (App., $1.50) Kirkland, "Some African Highways" (Dana, Estes & Co., Boston, $1.50); Lyde, "A Geography of Africa" (McM., $0.50); Penfield, "Present Day Egypt" (Cent., $2.00); Rawlinson, "The Story of Ancient Egypt" (Put., $1.50); Selous, "African Nature Note and Reminiscences" (McM., $3.00); Selous, "A Hunter's Wanderings in Africa" (McM., $2.50); Stanley and others, "Africa: its Partition and its Future" (Dodd, Mead & Co., New York, $1.25); Stanley, "My Dark Companions" (Scrib., $2.00); Stanley, "My Kalulu," (Scrib., $1.50); Stanley, "Through South Africa" (Scrib., $1.00); Verner, "Pioneering in Central Africa" (Presbyterian Board of Publication, Philadelphia, $2.00); White, "A Little Story of South Africa and up the East Coast" (A. Flanagan, Chicago, $0.50); Younghusband, "South Africa of To-day" (McM., $2.00); "Abyssinia," (*N.G.M.*, March '01: 89); "Africa since 1888" (*N.G.M.*, May, '96: 157); Bosson, "Biskra, the Ziban Queen" (*N.G.M.*, Aug., '08: 563); Bridgeman, "The New British Empire of Sudan" (*N.G.M.*, May, '06: 242); Hilder, "British South Africa and the Transvaal" (*N.G.M.*, March '00: 81); Landor, "Across the Wildest Africa" (*N.G.M.*, Oct., '08: 694); Perdicaris, "Morocco, the Land of the Extreme West" (*N.G.M.*, March, '06: 117); "The Gold Coast, Ashanti and Kumassi" (*N.G.M.*, Jan., '97: 1); Williams, "The Diamond Mines of South Africa" (*N.G.M.*, June '06: 344); Wollaston, "Amid the Snow Peaks of the Equator" (*N.G.M.*, March '09: 256); Platt, "Climatic control in the Desert" (*J.S.G.*, Sept., '00: 255); "The Egyptian Sudan and its History" (*J.S.G.*, Feb., '99: 41).

Australia and the Islands of the Pacific. — Ballou "Under the Southern Cross" (H.M.C., $1.50); Carpenter, "Geographical Reader, Australia and Islands of the Sea" (A.B.C., $0.60); Chalmers, "Pioneer Life and Work in New Guinea" (F.H. Revell & Co., New York, $1.20); Davitt, "Life and Progress in Australasia" (New Amsterdam Book Co., New York, $2.50); Herbertson, "Descriptive Geography: Australia and Oceanica" (McM., $0.80); José, "Australia, and New Zealand" (McM., $0.40); Kellogg, "Australia and the Islands of the Sea" (S.B.C., $.068); Loughman, "New Zealand at Home" (Scrib. $1.75); Nixon-Roulet, "Our Little Australian Cousin" (L. C. Page & Co., Boston, $.060); Pratt, "Stories of Australasia" (E.P.C., $0.40); Reeves, "Brown Men and Women" (McM., $3.50); Shoemaker, "Islands of the Southern Seas" (Put., $2.25); Grimshaw, "In the Savage South Seas" (Lipp., Phila.); Lloyd, "New Zealand" (*N.G.M.*, Sept., '92 342); Morgan, "The Samoan Islands" (*N.G.M.*, Nov., '00: 417); Safford, "Guam our Smallest Possession" (*N.G.M.*, May, '05: 229); "Samoa" (*N.G.M*, June, '00: 207); "The Samoan Islands" (*N.G.M.*, Nov., '00: 417); Kellogg, "American Samoa" (*J.G.*, Jan.. '06: 18).

APPENDIX

TABLES OF AREA, POPULATION, ETC.

SIZE OF EARTH

Length of Earth's Diameter at the Equator (miles)	7,926	The Earth's Surface (square miles)	196,940,000
Length of Equator (miles)	24,902	Total Area of Ocean (square miles)	141,486,000

CONTINENTS AND PRINCIPAL COUNTRIES, COLONIES, ETC.

	Area in Square Miles	Population
North America, 1910	**8,559,000**	**120,000,000**
Alaska, 1900	590,884	63,592
Antigua	108	35,073
Bahama Islands, 1901	5,450	53,735
Bermuda Islands, 1901	20	17,535
British Honduras, 1908	7,562	43,270
Canada, 1901	3,745,574	5,371,315
Central America, 1909	208,427	4,912,856
Costa Rica, 1907	18,400	351,176
Cuba, 1907	44,000	2,048,980
Greenland, 1901	826,500	11,893
Guatemala, 1906	48,290	1,882,992
Haiti (Island), 1908	28,249	2,029,700
Honduras, 1905	46,250	500,136
Jamaica, 1909	4,200	848,656
Mexico, 1900	767,005	13,605,919
Newfoundland, 1908	42,734	233,012
Nicaragua, 1906	49,200	600,000
Panama, 1909	31,500	419,029
St. Croix, 1901	84	18,401
St. Thomas, 1901	32	11,269
Salvador, 1906	7,225	1,116,253
United States, see p. 426 [1]		
South America, 1906	**7,598,000**	**43,770,000**
Argentina, 1908	1,135,840	6,489,023
Bolivia, 1908	605,400	2,049,083
Brazil, 1908	3,218,991	21,461,100
Chile, 1908	292,580	3,302,204
Colombia, 1908	435,100	4,303,000
Ecuador, 1889	116,000	1,400,000
Falkland Islands, 1908	6,500	2,289
Galapagos Islands, 1889	2,400	400
Guiana, British, 1908	90,277	304,089
Guiana, Dutch, 1908	46,060	81,038
Guiana, French, 1906	30,500	39,349
Juan Fernandez	36	
Paraguay, 1905	98,000	631,347
Peru, 1896	695,733	4,609,999
South Georgia Islands	1,000	uninhabited
Tobago, 1901	114	18,750
Trinidad Island, 1901	1,754	255,148
Uruguay, 1908	72,210	1,042,668
Venezuela, 1908	393,870	2,664,241
Europe, 1900	**3,796,000**	**392,246,000**
Andorra, 1897	175	5,231
Austria, 1900	115,903	26,150,708
Austria-Hungary, 1900	261,100	46,982,836
Balearic Isles, 1900	1,935	311,649
Belgium, 1908	11,373	7,386,444
British Empire, 1906	11,433,283	392,846,835
British Isles, 1909	121,390	45,526,527
Bulgaria, 1908	38,080	4,158,409
Corsica, 1906	3,367	291,160
Crete, 1900	3,365	310,185
Denmark, 1906	15,592	2,605,268
England, 1901	50,874	31,071,703
England and Wales, 1909	58,324	35,756,615
Faroe Islands, 1901	540	16,349
France, 1906	207,054	39,252,245
German Empire, 1905	208,780	60,641,278
Great Britain, 1909	88,729	40,634,263
Greece, 1907	25,014	2,631,952
Hebrides Islands, 1897	3,000	100,000
Hungary, 1900	125,430	19,254,559
Iceland, 1901	39,756	78,470
Ireland, 1909	32,360	4,374,158
Italy, 1909	110,659	34,269,746
Liechtenstein, 1906	65	9,650
Luxemburg, 1900	1,706	219,210
Malta, 1909	95	212,888
Monaco, 1909	8	19,121
Montenegro, 1909	3,630	250,000
Netherlands, 1908	12,648	5,825,198
Norway, 1908	124,130	2,352,786
Orkney Islands, 1901	376	28,699
Portugal, 1900	35,490	5,423,132
Prussia, 1905	134,616	37,293,324
Roumania, 1908	50,720	6,771,722
Russia, 1908	1,862,524	113,841,000
Russian Empire, 1908	8,647,657	155,433,300
San Marino, 1909	38	10,310
Sardinia, 1909	9,306	861,249
Scotland, 1909	30,405	4,877,648
Servia, 1905	18,650	2,688,025
Shetland Islands, 1901	551	28,166
Sicily, 1909	9,935	3,574,424
Spain, 1908	194,783	19,712,585
Sweden, 1908	172,876	5,429,600
Switzerland, 1908	15,976	3,559,349
Turkey, 1909	65,350	6,130,200
Turkish Empire, 1909	1,565,000	85,400,000
Wales, 1901	7,450	1,455,940
Asia, with East Indies, 1900	**16,770,951**	**877,000,000**
Aden, 1901	75	41,222
Afghanistan, 1909	250,000	4,550,000
Arabia, 1909	880,000	950,000
Baluchistan, 1901	131,855	915,000
Bhutan, 1909	20,000	250,000
Bokhara, 1909	83,000	1,250,000
Burma, 1901	236,738	10,490,624

	Area in Square Miles	Population
Ceylon, 1907	25,332	3,988,064
China (proper), 1906	1,532,420	407,253,030
Chinese Empire, 1906	4,277,170	438,214,000
Chinese Turkestan, 1906	550,340	1,200,000
Cyprus, 1908	3,584	258,997
Formosa, 1905	13,458	3,039,751
French India, 1907	196	287,402
French Indo-China, 1901	256,000	18,230,000
India, 1901	1,766,642	294,361,056
Japan, 1908	147,655	49,581,928
Khiva, 1909	24,000	800,000
Korea, 1909	86,000	10,000,000
Manchuria, 1906	363,610	16,000,000
Mongolia, 1906	1,367,600	2,600,000
Nepal, 1909	54,000	5,000,000
Oman, 1909	82,000	500,000
Palestine, 1905	10,000	700,000
Persia, 1909	628,000	9,500,000
Portuguese Indies, 1901	7,330	300,000
Russia in Asia, 1908	6,207,662	22,661,600
Russian Turkestan, 1908	400,770	5,961,600
Siam, 1909	195,000	6,686,486
Siberia, 1908	4,786,730	7,049,200
Straits Settlements, 1901	1,472	572,249
Sungaria, 1901	147,950	600,000
Tibet, 1909	463,200	6,500,000
Turkey in Asia, 1909	693,610	17,683,500
Africa, 1900	**11,403,000**	**170,000,000**
Abyssinia, 1909	200,000	9,000,000–11,000,000
Algeria (Fr.), 1907	343,500	5,231,850
Anglo-Egyptian Sudan, 1909	950,000	2,363,000
Angola, 1909	484,800	4,119,000
Belgian Congo, 1909	909,650	20,000,000
British East Africa, 1909	200,000	4,000,000
British Somaliland, 1909	68,000	300,000
Canary Islands (Sp.), 1900	2,807	358,564
Cape of Good Hope, 1910	276,995	507,500
Cape Verde Islands (Port.), 1900	1,480	147,424
Egypt, 1907	400,000	11,139,978
Eritrea (Italy), 1906	45,800	450,000
French Sudan, 1901	354,000	2,860,000
French Kongo, 1907	669,280	5,000,000
French Somaliland, 1907	5,790	180,000
French Territory, 1906	3,932,900	32,092,340
Gambia (Br.), 1909	4,500	152,000
German East Africa, 1909	384,180	10,000,000
German Southwest Africa, 1909	322,450	120,000
German Territory, 1909	1,027,820	14,546,000
Gold Coast (Br.), 1901	82,000	1,486,433
Italian Somaliland, 1909	129,700	400,000
Kamerun (Ger.), 1909	191,130	3,000,000
Liberia, 1909	40,000	1,500,000–2,100,000
Madagascar (Fr.), 1908	228,000	2,706,661
Madeira Islands, 1900	314	150,574
Mauritius (Br.), 1901	713	373,326
Morocco, 1909	219,000	4,340,000–4,580,000
Natal (Br.), 1908	35,371	1,206,386
Niger Territories (Br.), 1901	4–5,000,000	25–40,000,000
Orange River Colony, 1910	50,392	466,380
Portuguese East Africa, 1901	293,400	3,120,000
Portuguese Guinea, 1901	13,940	820,000
Portuguese West Africa, 1901	484,800	4,119,000
Réunion Island (Fr.), 1907	970	201,000
St. Helena (Br.), 1908	47	3,558
Sierra Leone (Br.), 1901	4,000	76,655
South African Union, 1910	472,897	5,450,237
Spanish Africa, 1900	80,580	291,946
Togo, 1909	33,700	1,000,330
Transvaal, 1910	110,139	1,269,951
Tripoli (Turk.), 1906	398,900	1,000,000
Tunis (Fr.), 1907	45,779	1,500,000
Uganda, 1909	117,681	3,920,000
Zanzibar (Br.), 1908	640	176,000 (?)
Australia, Commonwealth of, 1908	**2,974,581**	**4,275,306**
New South Wales, 1909	310,367	1,445,306
Northern Territory, 1907	903,690	392,431
Queensland, 1908	670,500	558,237
South Australia, 1907	903,690	392,431
Tasmania, 1906	26,215	180,156
Victoria, 1908	87,884	1,273,318
Western Australia, 1909	975,920	278,027
East Indies and larger islands of Pacific		
Borneo, 1905	212,737	1,233,655
Celebes, 1905	71,470	351,905
Fiji Islands, 1908	7,435	130,891
Hawaiian Islands, 1900	6,449	154,001
Java, 1905	50,554	30,098,008
Molucca Islands, 1905	43,864	407,906
New Caledonia, 1907	7,200	55,800
New Guinea, 1901	275,329	3,050,000
New Zealand, 1909	104,751	1,029,417
Philippine Islands, 1903	127,853	7,635,426
Samoa Islands, 1906	1,000	33,478
Solomon Islands, 1909	12,000	150,247
Sumatra, 1905	161,612	4,029,508
Total Area of Continents		**51,000,000**
Total Population		**1,610,000,000**

STATES AND TERRITORIES OF THE UNITED STATES

	Area in Square Miles	Population 1900	Population 1910
Alabama	51,998	1,828,697	2,138,093
Alaska	590,884	63,592	64,356
Arizona	113,956	122,931	204,354
Arkansas	53,335	1,311,564	1,574,449
California	158,297	1,485,053	2,377,549
Colorado	103,948	539,700	799,024
Connecticut	4,965	908,420	1,114,756
Delaware	2,370	184,735	202,322
District of Columbia	70	278,718	331,069
Florida	58,666	528,542	752,619
Georgia	59,265	2,216,331	2,609,121
Guam	210	8,561	11,973
Hawaiian Islands	6,449	154,001	191,909
Idaho	84,313	161,772	325,594
Illinois	56,665	4,821,550	5,638,591
Indiana	36,354	2,516,462	2,700,876
Iowa	56,147	2,231,853	2,224,771
Kansas	82,158	1,470,495	1,690,949
Kentucky	40,598	2,147,174	2,289,905
Louisiana	48,506	1,381,625	1,656,388
Maine	33,040	694,466	742,371
Maryland	12,327	1,188,044	1,295,346
Massachusetts	8,266	2,805,346	3,366,416
Michigan	57,980	2,420,982	2,810,173
Minnesota	84,682	1,751,394	2,075,708
Mississippi	46,865	1,551,270	1,797,114
Missouri	69,420	3,106,665	3,293,335
Montana	146,572	243,329	376,053
Nebraska	77,520	1,066,300	1,192,214
Nevada	110,690	42,335	81,875

	Area in Square Miles	Population 1900	Population 1910
New Hampshire	9,341	411,588	430,572
New Jersey	8,224	1,883,669	2,537,167
New Mexico	122,634	195,310	327,301
New York	49,204	7,268,894	9,113,614
North Carolina	52,426	1,893,810	2,206,287
North Dakota	70,837	319,146	557,056
Ohio	41,040	4,157,545	4,767,121
Oklahoma	38,848	398,331	1,657,155
Oregon	96,699	413,536	672,765
Pennsylvania	45,126	6,302,115	7,665,111
Philippine Islands	127,853	8,000,000	7,912,593
Porto Rico, 1899	3,606	953,243	1,118,012
Rhode Island	1,248	428,556	542,610
South Carolina	30,989	1,340,316	1,515,400
South Dakota	77,615	401,570	583,888
Tennessee	42,022	2,020,616	2,184,789
Texas	265,896	3,048,710	3,896,542
Tutuila	77	3,800	6,780 ('09)
Utah	84,990	276,749	373,351
Vermont	9,564	343,641	355,956
Virginia	42,627	1,854,184	2,061,612
Washington	69,127	518,103	1,141,990
West Virginia	24,170	958,800	1,221,119
Wisconsin	56,066	2,069,042	2,333,860
Wyoming	97,914	92,531	145,965
United States, total	**3,624,122**	**84,815,937**	**101,037,557**
United States (without Alaska, Philippine Islands, etc.)	**3,026,789**	**75,994,578**	**91,972,266**

TWENTY-FIVE OF THE LARGEST CITIES IN THE WORLD

		Population
1.	London, England, 1909	4,833,968
	Greater London, 1909	7,429,740
2.	New York, U. S., 1910	4,766,883
3.	Paris, France, 1906	2,763,393
4.	Tokyo, Japan, 1908	2,186,079
5.	Chicago, U. S., 1910	2,185,283
6.	Vienna, Austria-Hungary, 1909	2,085,888
7.	Berlin, Germany, 1905	2,040,148
8.	Buenos Aires, Argentina, 1908	1,189,252
9.	St. Petersburg, Russia, 1905	1,678,000
10.	Philadelphia, U. S., 1910	1,549,008
11.	Moscow, Russia, 1907	1,359,254
12.	Osaka, Japan, 1908	1,226,590
13.	Constantinople, Turkey, 1910	1,106,000
14.	Calcutta, India, 1901	1,026,987
15.	Siangtan, China, 1908	1,000,000
16.	Singanfu, China, 1908	1,000,000
17.	Canton, China, 1908	900,000
18.	Glasgow, Scotland, 1909	872,021
19.	Hankau, China, 1908	820,000
20.	Rio de Janeiro, Brazil, 1906	811,265
21.	Hamburg, Germany, 1905	802,793
22.	Tientsin, China, 1908	800,000
23.	Bombay, India, 1901	776,006
24.	Liverpool, England, 1909	760,357
25.	Warsaw, Russia, 1901	756,426

TWENTY-FIVE LARGEST CITIES IN THE UNITED STATES

		Population 1900	Population 1910
1.	New York, N.Y.	3,437,202	4,766,883
2.	Chicago, Ill.	1,698,575	2,185,283
3.	Philadelphia, Pa.	1,293,697	1,549,008
4.	St. Louis, Mo.	575,238	687,029
5.	Boston, Mass.	560,892	670,585
6.	Cleveland, Ohio	381,768	560,663
7.	Baltimore, Md.	508,957	558,485
8.	Pittsburg, Pa.	321,616	533,905
9.	Detroit, Mich.	285,704	465,766
10.	Buffalo, N.Y.	352,387	423,715
11.	San Francisco, Cal.	342,782	416,912
12.	Milwaukee, Wis.	285,315	373,857
13.	Cincinnati, Ohio	325,902	364,463
14.	Newark, N.J.	246,070	347,469
15.	New Orleans, La.	287,104	339,075
16.	Washington, D.C.	278,718	331,069
17.	Los Angeles, Cal.	102,479	319,198
18.	Minneapolis, Minn.	202,718	301,408
19.	Jersey City, N.J.	206,433	267,779
20.	Kansas City, Mo.	163,752	248,381
21.	Seattle, Wash.	80,671	237,194
22.	Indianapolis, Ind.	169,164	233,650
23.	Providence, R.I.	175,597	224,326
24.	Louisville, Ky.	204,731	223,928
25.	Rochester, N.Y.	162,608	218,149

GROWTH OF THE FIFTEEN LARGEST CITIES OF THE COUNTRY

	City	1800	1830	1890	1900	1910
1.	New York, N.Y.	60,489 (1)	197,112 (1)	2,507,414 (1)	3,437,202 (1)	4,766,883
2.	Chicago, Ill.	——	4,470 (1840)	1,099,850 (2)	1,698,575 (2)	2,185,283
3.	Philadelphia, Pa.	41,220 (2)	80,462 (3)	1,046,964 (3)	1,293,697 (3)	1,549,008
4.	St. Louis, Mo.	10,049 (1820)	14,125	451,770 (4)	575,238 (4)	687,029
5.	Boston, Mass.	24,937 (4)	61,392 (4)	448,477 (5)	560,892 (5)	670,585
6.	Cleveland, Ohio	606 (1820)	1,076	261,353 (9)	381,768 (7)	560,663
7.	Baltimore, Md.	26,514 (3)	80,620 (2)	434,439 (6)	508,957 (6)	558,485
8.	Pittsburg, Pa.	1,565	12,568	238,617 (12)	321,616 (11)	533,905
9.	Detroit, Mich.	1,422 (1820)	2,222	205,876 (14)	285,704 (13)	465,766
10.	Buffalo, N.Y.	2,095 (1820)	8,668	255,664 (10)	352,387 (8)	423,715
11.	San Francisco, Cal.	——	——	298,997 (7)	342,782 (9)	416,912
12.	Milwaukee, Wis.	——	1,172 (1840)	204,468 (15)	285,315 (14)	373,857
13.	Cincinnati, Ohio	2,540 (1810)	24,831 (7)	296,908 (8)	325,902 (10)	364,463
14.	Newark, N.J.	6,008 (1810)	10,953	181,830	246,070	347,469
15.	New Orleans, La.	17,242 (1810)	29,737 (6)	242,039 (11)	287,104 (12)	339,075

CITIES OF THE UNITED STATES WITH 25,000 OR MORE INHABITANTS IN 1910; AND A FEW OTHERS, MOSTLY MENTIONED IN THE BOOK

	Population, 1900	Population, 1910
Akron, Ohio	42,728	69,067
Albany, N.Y.	94,151	100,253
Albuquerque, N.M.	6,238	11,020
Allentown, Pa.	35,416	51,913
Altoona, Pa.	38,973	52,127
Amsterdam, N.Y.	20,929	31,267
Anaconda, Mont.	9,453	10,134
Annapolis, Md.	8,575	8,609
Ann Arbor, Mich.	14,509	14,817
Asheville, N.C.	14,694	18,762
Ashland, Wis.	13,074	11,594
Astoria, Ore.	8,381	9,599
Atchison, Kan.	15,722	16,429
Atlanta, Ga.	89,872	154,839
Atlantic City, N.J.	27,838	46,150
Auburn, Me.	12,951	15,064
Auburn, N.Y.	30,345	34,668
Augusta, Ga.	39,441	41,040
Augusta, Me.	11,683	13,211
Aurora, Ill.	24,147	29,807
Austin, Tex.	22,258	29,860
Baltimore, Md.	508,957	558,485
Bangor, Me.	21,850	24,803
Barre, Vt.	8,448	10,734
Bath, Me.	10,477	9,396
Baton Rouge, La.	11,269	14,897
Battle Creek, Mich.	18,563	25,267
Bay City, Mich.	40,747	45,166
Bayonne, N.J.	32,722	55,545
Bellingham, Wash.	11,062	24,296
Berkeley, Cal.	13,214	40,434
Biddeford, Me.	16,145	17,079
Billings, Mont.	3,221	10,031
Binghamton, N.Y.	39,647	48,443
Birmingham, Ala.	38,415	132,685
Bisbee, Ariz.	7,000	9,019
Bismarck, N.D.	3,319	13,2685
Bloomington, Ill.	23,286	25,768
Boise, Idaho	5,957	17,358
Boston, Mass.	560,892	670,585
Bradford, Pa.	15,029	14,544
Bridgeport, Conn.	70,996	102,054
Brockton, Mass.	40,063	56,878
Brookline, Mass.	19,935	27,792
Brunswick, Ga.	9,081	10,182
Buffalo, N.Y.	352,387	423,715
Burlington, Vt.	18,640	20,463
Butte, Mont.	30,470	39,165
Cambridge, Mass.	91,886	104,839
Camden, N.J.	75,935	94,538
Canton, Ohio	30,667	50,217
Carson City, Nev.	2,100	2,466
Cedar Rapids, Iowa	25,656	32,811
Champaign, Ill.	9,098	12,421
Charleston, S.C.	55,807	58,833
Charleston, W.Va.	11,099	22,996
Charlotte, N.C.	18,091	34,014
Chattanooga, Tenn.	30,154	44,604
Chelsea, Mass.	34,072	32,452
Chester, Pa.	33,988	38,537
Cheyenne, Wyo.	14,087	11,320
Chicago, Ill.	1,698,575	2,185,283
Chicopee, Mass.	19,167	25,401
Cincinnati, Ohio	325,902	364,463
Clarksville, Tenn.	9,431	8,548
Cleveland, Ohio	381,768	560,663
Clinton, Iowa	22,698	25,577
Colorado Springs, Colo.	21,085	29,078
Columbia, S.C.	21,108	26,319
Columbus, Ga.	17,614	20,554
Columbus, Ohio	125,560	181,548
Concord, N.H.	19,632	21,497
Council Bluffs, Iowa	25,802	29,292
Covington, Ky.	42,938	53,270
Cripple Creek, Colo.	10,147	6,206

	Population, 1900	Population, 1910
Dallas, Tex.	42,638	92,104
Danville, Ill.	16,354	27,871
Danville, Va.	16,520	19,020
Davenport, Iowa	35,254	43,028
Dayton, Ohio	85,333	116,577
Decatur, Ill.	20,754	31,140
Denver, Colo.	133,859	213,381
Des Moines, Iowa	62,139	86,368
Detroit, Mich.	285,704	465,766
Douglas, Ariz.	—	6,437
Dover, Del.	3,329	3,720
Dover, N.H.	13,207	13,247
Dubuque, Iowa	36,297	38,494
Duluth, Minn.	52,969	78,466
Durham, N.C.	6,679	18,241
Easton, Pa.	25,238	28,523
East Orange, N.J.	21,506	34,371
Eastport, Me.	5,311	4,961
East St. Louis, Ill.	29,655	58,547
Elgin, Ill.	22,433	25,976
Elizabeth, N.J.	52,130	73,409
Elmira, N.Y.	35,672	37,176
El Paso, Tex.	15,906	39,279
Erie, Pa.	52,733	66,525
Evanston, Ill.	19,259	24,978
Evansville, Ind.	59,007	69,647
Everett, Mass.	24,336	33,484
Fall River, Mass.	104,863	119,295
Fargo, N.D.	9,589	14,331
Findlay, Ohio	17,613	14,858
Fitchburg, Mass.	31,531	37,826
Flint, Mich.	13,103	38,550
Fort Wayne, Ind.	45,115	63,933
Fort Worth, Tex.	26,688	73,312
Frankfort, Ky.	9,487	10,465
Fresno, Cal.	12,470	24,892
Galveston, Tex.	37,789	36,981
Gloucester, Mass.	26,121	24,398
Goldfield, Nev.	—	4,388
Grand Rapids, Mich.	87,565	112,571
Greeley, Colo.	3,023	8,179
Green Bay, Wis.	18,684	25,236
Greenville, S.C.	11,860	15,741
Guthrie, Ok.	10,006	11,654
Hamilton, Ohio	23,914	35,279
Harrisburg, Pa.	50,167	64,186
Hartford, Conn.	79,850	98,915
Haverhill, Mass.	37,175	44,115
Hazelton, Pa.	14,280	25,452
Helena, Mont.	10,770	12,515
High Point, N.C.	4,163	9,525
Hilo, Hawaiian Islands	19,785	6,745
Hoboken, N.J.	59,364	70,324
Holyoke, Mass.	45,712	57,730
Honolulu, Hawaiian Islands	39,306	52,183
Hot Springs, Ark.	9,973	8,772
Houghton, Mich.	3,595	5,113
Houston, Tex.	44,633	78,800
Huntington, W. Va.	11,923	31,161
Huntsville, Ala.	8,068	7,611
Indianapolis, Ind.	169,164	233,650
Ishpeming, Mich.	13,255	12,448
Ithaca, N.Y.	13,136	14,802
Jackson, Mich.	25,180	31,433
Jackson, Miss.	7,816	21,262
Jacksonville, Fla.	28,429	57,699
Jamestown, N.Y.	22,892	31,297
Jefferson City, Mo.	9,664	11,850
Jersey City, N.J.	206,433	267,779
Johnstown, Pa.	35,986	55,482
Joliet, Ill.	29,353	34,670
Joplin, Mo.	26,023	32,073
Juneau, Alaska	1,864	1,644
Kalamazoo, Mich.	24,404	39,437
Kansas City, Kan.	51,418	82,331

	Population, 1900	Population, 1910
Kansas City, Mo.	163,752	248,381
Key West, Fla.	17,114	19,945
Kingston, N.Y.	24,535	25,908
Knoxville, Tenn.	32,637	36,346
La Crosse, Wis.	28,895	30,417
Lancaster, Pa.	41,459	47,227
Lansing, Mich.	16,485	31,229
Laramie, Wyo.	8,207	8,237
Lawrence, Mass.	62,559	85,892
Leadville, Colo.	12,455	7,508
Lewiston, Idaho	2,425	6,043
Lewiston, Me.	23,761	26,247
Lexington, Ky.	26,369	35,099
Lima, Ohio	21,723	30,508
Lincoln, Neb.	40,169	43,973
Little Rock, Ark.	38,307	45,941
Lockport, N.Y.	16,581	17,970
Lorain, Ohio	16,028	28,883
Los Angeles, Cal.	127,927	319,198
Louisville, Ky.	204,731	223,928
Lowell, Mass.	94,969	106,294
Lynchburg, Va.	18,891	29,494
Lynn, Mass.	68,513	89,336
Macon, Ga.	23,272	40,665
Madison, Wis.	19,164	25,531
Malden, Mass.	33,664	44,404
Manchester, N.H.	56,987	70,063
Manila, Philippines, 1903	219,928	—
Marquette, Mich.	10,058	11,503
McKeesport, Pa.	34,227	42,694
Memphis, Tenn.	102,320	131,105
Meriden, Conn.	24,296	27,265
Miami, Fla.	1,681	5,471
Milwaukee, Wis.	285,315	373,857
Minneapolis, Minn.	202,718	301,408
Mobile, Ala.	38,469	51,521
Montgomery, Ala.	30,346	38,136
Montpelier, Vt.	6,266	7,856
Mount Vernon, N.Y.	21,228	30,919
Muskogee, Okla.	4,254	25,278
Nashua, N.H.	23,898	26,005
Nashville, Tenn.	80,865	110,364
Natchez, Miss.	12,210	11,791
Newark, N.J.	246,070	347,469
Newark, Ohio	18,157	25,404
New Bedford, Mass.	62,442	96,652
New Britain, Conn.	25,998	43,916
Newburgh, N.Y.	24,943	27,805
Newcastle, Pa.	28,339	36,280
New Haven, Conn.	108,027	133,605
New Orleans, La.	287,104	339,075
Newport, Ky.	28,301	30,309
Newport, R.I.	22,441	27,149
Newport News, Va.	19,635	20,205
New Rochelle, N.Y.	14,720	28,867
Newton, Mass.	33,587	39,806
New York, N.Y.	3,437,202	4,766,883
Niagara Falls, N.Y.	19,457	30,445
Nome City, Alaska	12,486	2,600
Norfolk, Va.	46,624	67,452
Norristown, Pa.	22,265	27,875
North Yakima, Wash.	3,154	14,082
Oakland, Cal.	66,960	150,174
Ogden, Utah	16,313	25,580
Oil City, Pa.	13,264	15,657
Oklahoma City, Okla.	10,037	64,205
Olean, N.Y.	9,462	14,743
Olympia, Wash.	4,082	6,996
Omaha, Neb.	102,555	124,096
Orange, N.J.	24,141	29,630
Oshkosh, Wis.	28,284	33,062
Oswego, N.Y.	22,199	23,368
Pasadena, Cal.	9,117	30,291
Passaic, N.J.	27,777	54,773
Paterson, N.J.	105,171	125,600
Pawtucket, R.I.	39,231	51,622
Pensacola, Fla.	17,747	22,982
Peoria, Ill.	56,100	66,950
Perth Amboy, N.J.	17,690	32,121
Petersburg, Va.	21,810	24,147
Philadelphia, Pa.	1,293,697	1,549,008
Phœnix, Ariz.	5,544	11,134
Pierre, S.D.	2,306	3,656
Pittsburg, Pa.	321,616	533,905
Pittsfield, Mass.	21,766	32,121
Plymouth, Mass.	9,562	12,141
Pomona, Cal.	5,526	10,207
Ponce, Porto Rico, 1899	27,952	35,027
Portland, Me.	50,145	58,571
Portland, Ore.	90,426	207,214
Portsmouth, N.H.	10,637	11,269
Portsmouth, Va.	17,427	33,190
Poughkeepsie, N.Y.	24,029	27,936
Prescott, Ariz.	3,559	5,092
Providence, R.I.	175,597	224,326
Provincetown, Mass., 1895	4,555	4,869
Pueblo, Colo.	28,157	44,395
Quincy, Ill.	36,252	36,587
Quincy, Mass.	23,899	32,642
Racine, Wis.	29,102	38,002
Raleigh, N.C.	13,643	19,218
Reading, Pa.	78,961	96,071
Redlands, Cal.	4,797	10,449
Richmond, Va.	85,050	127,628
Riverside, Cal.	7,973	15,212
Roanoke, Va.	21,495	34,874
Rochester, N.Y.	162,608	218,149
Rockford, Ill.	31,051	45,401
Rome, Ga.	7,291	12,099
Rutland, Vt.	11,499	13,546
Sacramento, Cal.	29,282	44,696
Saginaw, Mich.	42,345	50,510
St. Augustine, Fla.	4,272	5,494
St. Joseph, Mo.	102,979	77,403
St. Louis, Mo.	575,238	687,029
St. Paul, Minn.	163,065	214,744
Salem, Mass.	35,956	43,697
Salem, Ore.	4,258	14,094
Salt Lake City, Utah	53,531	92,777
San Antonio, Tex.	53,321	96,614
San Bernardino, Cal.	6,150	12,779
San Diego, Cal.	17,700	39,578
San Francisco, Cal.	342,782	416,912
San José, Cal.	21,500	28,946
San Juan, Porto Rico, 1899	32,048	48,716
Santa Fé, N.M.	5,603	5,072
Sault Ste. Marie, Mich.	10,538	12,615
Savannah, Ga.	54,244	65,064
Schenectady, N.Y.	31,682	72,826
Scranton, Pa.	102,026	129,867
Seattle, Wash.	80,671	237,194
Shawnee, Okla.	3,464	12,474
Sheboygan, Wis.	22,962	26,398
Shenandoah, Pa.	20,321	25,774
Shreveport, La.	16,013	28,015
Sioux City, Iowa	33,111	47,828
Sioux Falls, S.D.	10,266	14,094
Sitka, Alaska	1,396	1,039
Skagway, Alaska	3,117	872
Somerville, Mass.	61,643	77,236
South Bend, Ind.	35,999	53,684
South Omaha, Neb.	26,001	26,259
Spartanburg, S.C.	11,395	17,519
Spokane, Wash.	36,848	104,402
Springfield, Ill.	34,159	51,678
Springfield, Mass.	62,059	88,926
Springfield, Mo.	23,267	35,201
Springfield, Ohio	38,253	46,921
Stamford, Conn.	15,997	25,138
Stockton, Cal.	17,506	23,253
Superior, Wis.	31,091	40,384
Syracuse, N.Y.	108,374	137,249
Tacoma, Wash.	37,714	83,743
Tallahassee, Fla.	2,981	5,018

	Population, 1900	Population, 1910
Tampa, Fla.	15,839	37,782
Taunton, Mass.	31,036	34,259
Terre Haute, Ind.	36,673	58,157
Toledo, Ohio	131,822	168,497
Tonopah, Nev.	—	3,900
Topeka, Kan.	33,608	43,684
Trenton, N.J.	73,307	96,815
Troy, N.Y.	60,651	76,813
Tucson, Ariz.	7,531	13,193
Utica, N.Y.	56,383	74,419
Vicksburg, Miss.	14,834	20,814
Virginia City, Nev.	2,695	2,244
Waco, Tex.	20,686	26,425
Walla Walla, Wash.	10,049	19,363
Waltham, Mass.	23,481	27,834
Warwick, R.I.	21,316	26,629
Washington, D.C.	278,718	331,069
Waterbury, Conn.	45,859	73,141
Waterloo, Iowa	12,580	26,693
Watertown, N.Y.	21,696	26,730
Waterville, Me.	9,477	11,458
West Hoboken, N.J.	23,094	35,403
Wheeling, W. Va.	38,878	41,641
Wichita, Kan.	24,671	52,450
Wilkes Barre, Pa.	51,721	67,105
Williamsport, Pa.	28,757	31,860
Wilmington, Del.	76,508	87,411
Wilmington, N.C.	20,976	25,748
Winona, Minn.	19,714	18,583
Woonsocket, R.I.	28,204	38,125
Worcester, Mass.	118,421	145,986
Yonkers, N.Y.	47,931	79,803
York, Pa.	33,708	44,750
Youngstown, Ohio	44,885	79,066
Zanesville, Ohio	23,538	28,026

FOREIGN CITIES MENTIONED IN THE TEXT

	Population
Aachen, Germany, 1905	144,095
Abbeokuta, Niger Territory, 1897	150,000
Aberdeen, Scotland, 1909	181,918
Acapulco, Mexico, 1897	5,000
Adelaide, Australia, 1907	178,300
Aden, Aden, 1901	44,079
Adis Abeba, Abyssinia	30,000–35,000
Alexandria, Egypt, 1905	360,000
Algiers, Algeria, 1906	138,240
Amsterdam, Netherlands, 1908	565,589
Antwerp, Belgium, 1908	314,135
Archangel, Russia, 1897	20,882
Arequipa, Peru, 1908	35,000–40,000
Asuncion, Paraguay, 1905	60,259
Athens, Greece, 1907	167,479
Auckland, New Zealand, 1906	82,101
Bagdad, Turkey in Asia, 1910	145,000
Bahia, Brazil, 1900	230,000
Baku, Russia, 1900	179,133
Ballarat, Australia, 1903	48,063
Bangkok, Siam	400,000–600,000
Barcelona, Spain, 1900	533,000
Barmen, Germany, 1905	156,080
Basel, Switzerland, 1909	129,600
Batavia, Java, 1905	138,551
Belfast, Ireland, 1909	386,576
Belgrade, Servia, 1905	77,816
Benares, India, 1901	209,331
Bendigo, Australia, 1908	44,510
Berbera, Br. Somaliland, 1910	30,000
Bergen, Norway, 1900	72,251
Berlin, Germany, 1905	2,040,148
Berne, Switzerland, 1909	78,500
Bethany, Holy Land, 1890	1,105
Bethlehem, Holy Land, 1905	8,000
Bilbao, Spain, 1900	83,306
Birmingham, England, 1909	563,629
Bloemfontein, South Africa, 1904	33,883
Bogota, Colombia, 1908	123,300
Bologna, Italy, 1908	165,000
Bombay, India, 1901	776,006
Bordeaux, France, 1906	251,917
Bradford, England, 1909	293,983
Bremen, Germany, 1905	214,861
Breslau, Germany, 1905	470,904
Brindisi, Italy, 1907	22,021
Brisbane, Australia, 1908	137,670
Bristol, England, 1909	377,642
Brussels, Belgium, 1908	637,807
Bucharest, Roumania, 1908	300,000
Budapest, Austria-Hungary, 1900	732,423
Buenos Aires, Argentina, 1908	1,189,252
Cadiz, Spain, 1900	69,382
Cairo, Egypt, 1907	654,476
Calcutta, India, 1901	1,026,987
Calgary, Canada, 1906	11,967
Calao, Peru, 1908	31,000
Cambridge, England, 1905	38,760
Canton, China, 1908	900,000
Cape Town, Cape of Good Hope, 1904	169,641
Caracas, Venezuela, 1894	72,429
Cardiff, Wales, 1909	195,303
Cartagena, Colombia, 1905	14,000
Cartagena, Spain, 1900	99,871
Catania, Italy, 1908	163,000
Cayenne, French Guiana, 1910	12,426
Cettinge, Montenegro, 1906	4,500
Charlottetown, Canada, 1901	12,080
Chemnitz, Germany, 1905	244,927
Chengtu, China, 1896	250,000
Christchurch, New Zealand, 1906	67,878
Christiania, Norway, 1901	227,626
Ciudad Bolivar, Venezuela, 1894	11,686
Cologne, Germany, 1905	428,722
Colon, Panama, 1907	3,000
Constantinople, Turkey, 1910	1,106,000
Copenhagen, Denmark, 1906	426,540
Cordoba, Argentina, 1908	53,000
Cordoba, Spain, 1900	58,275
Cork, Ireland, 1901	76,122
Cuzco, Peru, 1908	10,000–15,000
Damascus, Turkey in Asia, 1910	260,000
Danzig, Germany, 1905	159,648
Dawson, Canada, 1901	9,142
Delhi, India, 1901	208,575
Dover, England, 1905	43,734
Dresden, Germany, 1905	516,996
Dublin, Ireland, 1901	290,638
Dundee, Scotland, 1909	169,409
Dunedin, New Zealand, 1906	56,020
Durban, Natal, 1904	69,903
Edinburgh, Scotland, 1909	355,366
Elberfeld, Germany, 1905	162,853
Essen, Germany, 1905	231,360
Fachan, China, 1904	500,000
Fez, Morocco, 1910	140,000
Fiume, Austria-Hungary, 1900	38,955
Florence, Italy, 1908	227,000
Frankfort, Germany, 1905	334,978
Fredericton, Canada, 1901	7,117
Freetown, Sierra Leone, 1910	37,682
Fuchau, China, 1908	624,000
Geneva, Switzerland, 1909	121,200
Genoa, Italy, 1908	275,000
Georgetown, British Guiana, 1908	58,176
Ghent, Belgium, 1908	163,763
Gibraltar, Spanish Pen., 1908	23,443
Glasgow, Scotland, 1909	872,021
Gothenburg, Sweden, 1908	162,480
Grenada, Spain, 1907	69,000

	Population
Grimsby, England, 1909	73,036
Guatemala, Guatemala, 1906	125,000
Guayaquil, Ecuador, 1910	80,000
Hague, The, Netherlands, 1908	259,012
Halifax, Canada, 1901	40,832
Halle, Germany, 1905	169,916
Hamburg, Germany, 1905	802,793
Hamilton, Bermuda, 1907	2,246
Hamilton, Canada, 1901	52,634
Hammerfest, Norway, 1891	2,239
Hangchau, China, 1908	350,000
Hankau, China, 1908	820,000
Hanover, Germany, 1905	250,024
Havana, Cuba, 1907	297,159
Havre, France, 1906	132,430
Hebron, Holy Land, 1905	18,000–19,000
Helsingfors, Russia, 1905	117,317
Hobart, Tasmania, 1901	24,655
Hongkong, China, 1908	329,650
Hué, French Ind. China, 1910	50,000
Hull, England, 1909	275,552
Hyderabad, India, 1901	448,466
Iquique, Chile, 1907	40,171
Irkutsk, Siberia, 1902	70,000
Jerusalem, Holy Land, 1910	70,000
Johannesburg, Transvaal, 1904	158,580
Joppa, Holy Land, 1905	45,000
Kabul, Afghanistan	60,000
Khartum, Egyptian Sudan, 1909	20,956
Khelat, Baluchistan, 1897	14,000
Kiev, Russia, 1902	319,000
Kimberley, Cape Colony, 1904	34,331
Kingston, Canada, 1901	17,961
Kingston, Jamaica, 1891	46,542
Kioto, Japan, 1908	442,462
Königsberg, Germany, 1905	223,770
Krefeld, Germany, 1905	110,344
Kumasasi, Ashanti, 1910	7,000
La Guaira, Venezuela, 1897	8,000
La Paz, Bolivia, 1909	78,856
La Plata, Argentina, 1908	80,000
Lassa, Tibet	25,000
Leeds, England, 1909	484,012
Leghorn, Italy, 1908	108,000
Leicester, England, 1909	244,255
Leipzig, Germany, 1905	503,672
Leith, Scotland, 1909	85,721
Libreville, French Congo, 1897	3,000
Liege, Belgium, 1908	175,870
Lille, France, 1906	205,602
Lima, Peru, 1908	140,884
Limoges, France, 1906	88,597
Lisbon, Portugal, 1900	356,009
Liverpool, England, 1909	760,357
Loanda, Port. W. Africa, 1897	14,000
Lodz, Russia, 1900	351,570
London, Canada, 1901	37,981
London, England, 1909	4,833,938
London, Greater, 1909	7,429,740
Lourenço Marquez, Port. E. Africa, 1908	9,849
Lucerne, Switzerland, 1909	36,200
Lucknow, India, 1901	264,049
Lyon, France, 1906	472,114
Madras, India, 1901	509,346
Madrid, Spain, 1900	539,835
Magdeburg, Germany, 1905	240,633
Malaga, Spain, 1900	130,109
Manaos, Brazil, 1906	50,000
Manchester, England, 1909	655,435
Mandalay, Burma, 1901	183,816
Marseille, France, 1906	517,498
Maskat, Oman, 1907	25,000
Mecca, Turkey, 1900	60,000
Melbourne, Australia, 1908	549,200
Messina, Italy, 1908	149,778

	Population
Metz, Germany, 1905	60,419
Mexico City, Mexico, 1900	344,721
Milan, Italy, 1908	584,000
Mocha, Turkey in Asia, 1897	5,000
Mombasa, Br. E. Africa, 1910	30,000
Monrovia, Liberia, 1905	8,000
Montevideo, Uruguay, 1908	306,000
Montreal, Canada, 1901	267,730
Morocco, Morocco, 1897	50,000
Moscow, Russia, 1907	1,359,254
Munich, Germany, 1905	538,983
Nagoya, Japan, 1908	378,231
Naples, Italy, 1908	596,000
Nassau, Bahama, 1910	12,534
Nazareth, Holy Land, 1905	11,000
Newcastle, England, 1909	281,584
Nice, France, 1906	134,232
Nizhni Novgorod, Russia, 1897	90,053
Nottingham, England, 1909	263,443
Nuremberg, Germany, 1905	294,426
Odessa, Russia, 1900	449,673
Oporto, Portugal, 1900	167,955
Osaka, Japan, 1908	1,226,590
Ottawa, Canada, 1901	59,928
Oxford, England, 1909	52,774
Palermo, Italy, 1908	319,000
Panama, Panama, 1910	20,000
Para, Brazil, 1892	65,000
Paramaribo, Dutch Guiana, 1908	34,962
Paris, France, 1906	2,763,393
Peking, China, 1908	700,000
Pernambuco, Brazil, 1906	150,000
Perth, West Australia, 1907	50,527
Peterborough, Canada, 1901	11,239
Pietermaritzburg, Natal, 1908	31,230
Piræus, Greece, 1907	73,579
Pisa, Italy, 1901	61,321
Port Arthur, Canada, 1901	3,214
Port Arthur, China	—
Port au Prince, Haiti, 1908	100,000
Port Said, Egypt, 1907	49,884
Portsmouth, England, 1909	214,726
Posen, Germany, 1905	136,808
Potsdam, Germany, 1905	61,414
Prague, Austria-Hungary, 1909	233,649
Pretoria, Transvaal, 1904	21,161
Puebla, Mexico, 1900	93,520
Quebec, Canada, 1901	68,840
Queenstown, Ireland, 1891	9,082
Quito, Ecuador, 1909	70,000
Rangoon, Burma, 1901	234,881
Rheims, France, 1906	109,359
Riga, Russia, 1897	282,230
Rio de Janeiro, Brazil, 1906	811,265
Rome, Italy, 1909	575,000
Rosario, Argentina, 1908	150,000
Rotterdam, Netherlands, 1908	411,635
Roubaix, France, 1906	121,017
Rouen, France, 1906	118,459
St. Etienne, France, 1906	146,788
St. John, Canada, 1901	40,711
St. John's, Newfoundland, 1901	31,501
St. Petersburg, Russia, 1905	1,678,000
Samarkand, Russian Turkestan, 1900	58,194
San Luis Potosi, Mexico, 1900	61,019
San Salvador, Salvador, 1906	59,540
Santiago, Chile, 1907	332,724
Santo Domingo, Santo Domingo, 1909	18,626
Santos, Brazil, 1900	35,000
São Paulo, Brazil, 1906	348,000
Seoul, Korea, 1908	150,000
Seville, Spain, 1900	148,315
Sèvres, France, 1891	6,902
Shanghai, China, 1908	651,000
Sheffield, England, 1909	470,958

	Population
Siangtan, China, 1908	1,000,000
Singanfu, China, 1908	1,000,000
Singapore, Straits Settlements, 1901	228,555
Smyrna, Turkey, 1909	201,000
Sofia, Bulgaria, 1908	100,000
Southampton, England, 1909	124,667
Stettin, Germany, 1905	224,119
Stockholm, Sweden, 1908	339,582
Strassburg, Germany, 1905	167,678
Stuttgart, Germany, 1905	249,286
Suchau, China, 1908	500,000
Sucre, Bolivia, 1909	23,416
Suez, Egypt, 1907	18,347
Swansea, Wales, 1909	98,308
Sydney, Australia, 1908	592,100
Tampico, Mexico, 1894	9,885
Tananarivo, Madagascar, 1901	72,000
Tangier, Morocco, 1901	35,000
Tashkend, Russian Turkestan, 1897	155,673
Teheran, Persia, 1905	280,000
Tiberias, Holy Land, 1905	5,000
Tientsin, China, 1908	800,000
Tiflis, Russia, 1897	159,590
Timbuktu, Sudan, 1897	20,000
Tokio, Japan, 1908	2,186,079
Toronto, Canada, 1901	208,040
Trebizond, Turkey in Asia, 1909	35,000

	Population
Trieste, Austria-Hungary, 1909	221,993
Tripoli, Tripoli, 1909	30,000
Trondhjem, Norway, 1900	38,180
Tunis, Tunis, 1906	227,519
Turin, Italy, 1908	371,000
Upernivik, Greenland	700
Valencia, Spain, 1900	213,530
Valparaiso, Chile, 1907	162,447
Vancouver, Canada, 1901	26,133
Venice, Italy, 1908	160,000
Vera Cruz, Mexico, 1900	29,164
Versailles, France, 1906	54,820
Victoria, Canada, 1901	20,816
Vienna, Austria-Hungary, 1909	2,085,888
Vladivostok, Siberia, 1900	38,000
Warsaw, Russia, 1901	756,426
Wellington, New Zealand, 1906	63,807
West Ham, England, 1909	321,767
Windsor, Canada, 1901	12,153
Winnipeg, Canada, 1906	90,153
Wuchang, China, 1898	300,000
Yakoba, Niger Terr., 1897	50,000
Yarmouth, Canada, 1901	6,430
Yokohama, Japan, 1908	394,303
Zanzibar (British), 1907	55,750
Zurich, Switzerland, 1909	183,500

ELEVATION OF SOME PLATEAUS AND MOUNTAIN PEAKS

	Feet
Abyssinian Plateau	5–7,000
Aconcagua, Andes, Argentina (highest in South America)	22,860
Apo, Mindanao, Philippines	10,312
Ararat, Turkey in Asia	17,325
Mt. Blanc, Alps, France (highest in Alps)	15,781
Bolivian Plateau	10–13,000
Brazilian Plateau	2–2,500
Chimborazo, Andes, Ecuador	20,498
Cotopaxi, Andes, Ecuador	19,613
Elbruz, Caucasus, Russia	18,200
Etna, Sicily	10,835
Everest, Himalayas, Nepal (highest known in world)	29,002
Fremont Peak, Rocky Mountains, Wy	13,790
Fujiyama, Japan	12,365
Hecla, Iceland	5,110
Kunchinjunga	28,156
Kenia, Africa	18,620
Kilimanjaro, Africa (highest known in Africa)	19,780
Kosciusko, Australia (highest in Australia)	7,336
Logan, Coast Ranges, Canada (highest known in Canada)	19,539
McKinley, Alaska (highest known in North America)	20,464
Mauna Kea, Hawaiian Islands	13,805

	Feet
Mauna Loa, Hawaiian Islands	13,675
Mayon, Luzon Island, Philippines	8,900
Mexican Plateau	5–6,000
Mitchell, Appalachian Mts., N.C. (highest in Eastern U. S.)	6,711
Mt. Marcy, New York	5,344
Mt. Tina, Haiti	10,300
Orizaba, Mexico (highest in Mexico)	18,314
Pico del Turquino, Cuba	8,600
Pike's Peak, Rocky Mountains, Colorado	14,111
Popocatopetl, Mexico	17,798
Rainier, Cascade Mountains, Washington	14,363
St. Elias, Alaska	18,025
San Francisco Mountain, Arizona	12,794
Shasta, Cascade Mountains, California	14,380
Tibet Plateau	10–15,000
United States, Western Plateau	5–6,000
Vesuvius, Italy	4,200
Washington, White Mountains, N.H. (highest in North-eastern U. S.)	6,279
Whitney, Sierra Nevada, California (highest in Western U. S.)	14,502
Yunque, Porto Rico	3,609

SOME OF THE LARGEST RIVERS OF THE WORLD

	Length in Miles	Basin Area Sq. Miles	Ocean
North America			
Arkansas	2,170	185,671	Atlantic
Colorado	2,000	225,049	Pacific
Columbia	1,400	216,537	Pacific
Mackenzie	2,000	590,000	Arctic
Missouri	3,000	527,155	Atlantic
Missouri-Mississippi	4,300	1,257,000	Atlantic
Nelson	1,732	432,000	Atlantic
Ohio	975	201,720	Atlantic
Rio Grande	1,800	240,000	Atlantic
St. Lawrence	2,200	530,000	Atlantic
Yukon	2,000	440,000	Pacific
South America			
Amazon	3,300	2,500,000	Atlantic
Orinoco	1,350	366,000	Atlantic
Plata	2,580	1,200,000	Atlantic
São Francisco	1,800	200,000	Atlantic
Europe			
Danube	1,770	300,000	Atlantic
Dneiper	1,200	242,000	Atlantic
Dwina	1,000	140,000	Arctic
Elbe	725	55,000	Atlantic
Po	400	27,000	Atlantic
Rhine	800	75,000	Atlantic
Rhone	500	38,000	Atlantic

	Length in Miles	Basin Area Sq. Miles	Ocean
Europe			
Seine	482	30,300	Atlantic
Thames	228	6,100	Atlantic
Volga	2,400	563,300	Caspian
Asia			
Amur	2,800	520,000	Pacific
Brahmaputra	1,800	425,000	Indian
Ganges	1,500	440,000	Indian
Hoang-ho	2,700	570,000	Pacific
Indus	1,800	372,700	Indian
Irawadi	1,500	158,000	Indian
Lena	2,800	950,000	Arctic
Mekong	2,800	280,000	Pacific
Ob	3,200	1,000,000	Arctic
Yangtse-kiang	3,200	548,000	Pacific
Yenisei	3,000	1,500,000	Arctic
Africa			
Congo	2,900	1,200,000	Atlantic
Niger	2,600	563,300	Atlantic
Nile	3,400	1,273,000	Atlantic
Zambezi	1,500	600,000	Indian
Australia			
Darling	1,100	——	Indian
Murray	1,000	270,000	Indian

SOME OF THE LARGE LAKES OF THE WORLD

	Area in Sq. Miles	Elevation in Feet	Greatest Depth in Feet
Aral Sea	26,900	160	225
Baikal	12,500	1,312	4,550
Balkash	7,800	780	70
Caspian	169,000	− 85 [1]	2,400
Chad, variable with season and often more	10,000	800–900	12
Dead Sea	370	− 1,310 [1]	1,330
Erie	9,990	573	210
Great Bear Lake	11,200	200	——
Great Salt Lake	2,360	4,218	30–50
Great Slave Lake	10,100	——	over 650
Huron	22,322	582	750
Ladoga	7,000	60	730
Manitoba	1,850	810	——
Michigan	21,729	582	870
Nicaragua	3,600	110	83
Nyassa	14,000	1,500	600 +
Ontario	7,104	247	738
Superior	30,829	602	1,008
Tanganyika	12,650	2,800	2,100
Titicaca	3,300	12,875	709
Victoria Nyanza	30,000	4,000	590 +
Winnipeg	9,400	710	70

[1] Below sea level.

DISTRIBUTION OF MANKIND

Mongolians	**540,000,000**
China	380,000,000
Japan and Korea	55,000,000
Indo-China	35,000,000
Malaysia	30,000,000
Other Mongolians	40,000,000
Caucasians	**770,000,000**
Europe	355,000,000
Asia	280,000,000
America	115,000,000
Africa	15,000,000
Australasia	5,000,000
Ethiopians	**173,000,000**
Africa and Madagascar	153,000,000
North and South America	20,000,000
American Indians	**22,170,000**
Mexico	8,765,000
Brazil	4,200,000
Colombia	3,150,000
Peru	2,700,000
Bolivia, Guatemala, and Venezuela	4,225,000
United States	250,000
Canada	100,000

RELIGIONS OF MANKIND

Buddhists and Brahmins	650,000,000
Christians	440,000,000
Jews	8,000,000
Mohammedans	180,000,000
Pagans and others	250,000,000

PRINCIPAL COUNTRIES FROM WHICH THE FOREIGN-BORN POPULATION OF THE UNITED STATES HAS COME

Country of Birth	Number in 1900
Germany	2,666,990
Ireland	1,618,567
Canada and Newfoundland	1,181,265
England	842,078
Sweden	573,040
Italy	484,207
Russia	424,096
Poland	383,510
Norway	336,985
Scotland	233,977
Total of foreign-born population	10,356,644

DISTRIBUTION OF NEGROES IN THE FIFTEEN STATES WHERE THEY ARE MOST NUMEROUS

States	Number of Negroes in 1900	Percentage of Negroes to Total Population, 1900
1. Georgia	1,034,813	46.69
2. Mississippi	907,630	58.50
3. Alabama	827,307	45.24
4. South Carolina	782,321	58.36
5. Virginia	660,722	35.63
6. Louisiana	650,804	47.10
7. North Carolina	624,469	32.97
8. Texas	620,722	20.36
9. Tennessee	480,243	23.77
10. Arkansas	366,856	27.97
11. Kentucky	284,706	13.25
12. Maryland	235,064	19.75
13. Florida	230,730	43.65
14. Missouri	161,234	5.18
15. Pennsylvania	156,845	2.48

Total number of Negroes in 1900, 8,840,789.

INDEX AND PRONOUNCING VOCABULARY

KEY TO PRONUNCIATION

ā, as in āle ; å, as in sen′åte ; â, as in câre ; ă, as in ăm ; ä, as in ärm ; å, as åsk ; *a*, as in fi′n*a*l ; ạ, as in ạll ; ē, as in ēve ; ĕ, as in ĕ-vent′ ; ė, as in ėnd ; ē, as in fērn ; *e*, as in re′*c*ent ; ī, as in īce ; i̇, as in i̇-de′a ; ĭ, as in ĭll ; ō, as in ōld ; ŏ, as in ŏrb ; ŏ, as in ŏdd ; ū, as in ūse ; ů, as in ů-nite′ ; ụ, as in rụde ; ụ, as in fụll ; ŭ, as in ŭp ; û, as in ûrn ; ў, as in pit′ў ; o͞o, as in fo͞od ; o͝o, as in fo͝ot ; ou, as in out ; oi, as in oil ; ṇ, representing simply the nasal tone of the preceding vowel as in ensemble (ăn′săn′b'l), ' (for voice glide) as in pardon (pär′d'n) ; g (hard), as in go ; s (sharp), as in so ; z (like s sonant), as in zone ; ch (= tsh) as in chair ; sh, for ch, as in machine ; zh (= sh made sonant), for z, as in azure ; j (= dzh), for g, as in gem ; k, for ch, as in chorus ; kw, for qu, as in queen ; ks (surd), for x, as in vex ; gz (sonant), for x, as in exist ; f, for ph, as in philosophy ; hw, for wh, as in what ; t, for ed, as in baked ; ng, as in long ; n̲ (like ng) for n before the sound of k or hard g, as in bank ; n (ordinary sound), as in no ; th (sonant), for th, as in then ; th (surd), as in thin.

The primary accent is indicated by a short, heavy mark (′), the secondary by a lighter mark (′).

The numbers refer to pages. Where several references are given, the pages on which the principal description is to be found are indicated by heavier type.

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